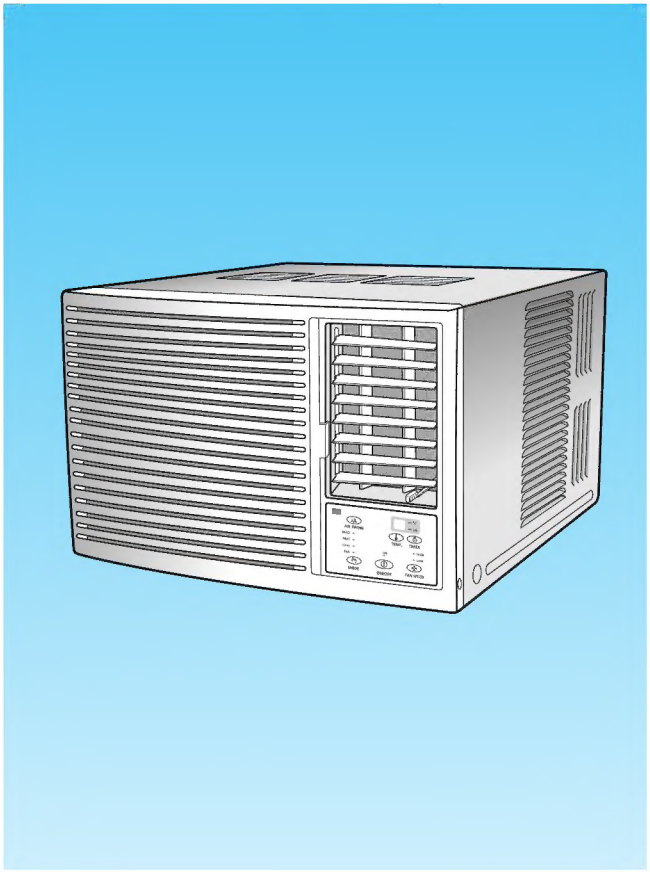
SAMSUNG

ROOM AIR CONDITIONER

AWH-1808ER

SERVICE Manual

AIR CONDITIONER



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1. Precautions

1. Warning: Prior to repair, disconnect the power cord from the circuit breaker.

2. Use proper parts: Use only exact replacement parts. (Also, we recommend replacing parts rather than repairing them.)

3. Use the proper tools: Use the proper tools and test equipment, and know how to use equipment may cause problems later-intermittent contact, for example.

4. Power Cord: Prior to repair, check the power cord and replace it if necessary.

5. Avoid using an extension cord, and avoid tapping into a power cord. This practice may result in malfunction or fire.

6. After completing repairs and reassembly, check the insulation resistance, Procedure: Prior to applying power, measure the resistance between the power cord and the ground terminal. The resistance must be greater than 30 megohms.

7. Make sure that the grounds are adequate.

8. Make sure that the installation conditions are satisfactory. Relocate the unit if necessary.

9. Keep children away from the unit while it is being repaired.

10. Be sure to clean the unit and its surrounding area.

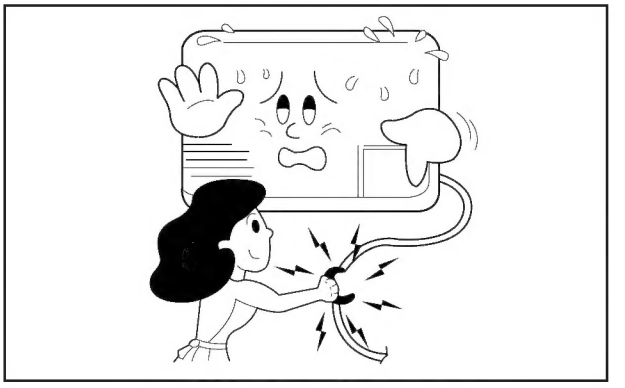


Fig. 1-1 Avoid Dangerous Contact

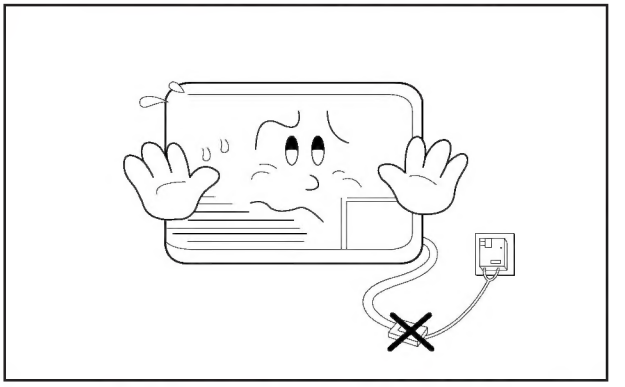


Fig. 1-2 No Tapping and No Extension Cords

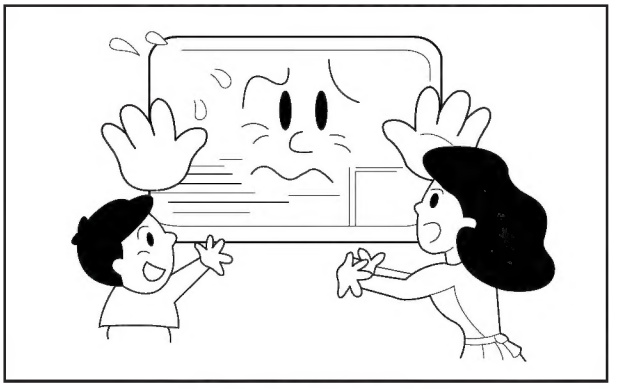


Fig. 1-3 No Kids Nearby!

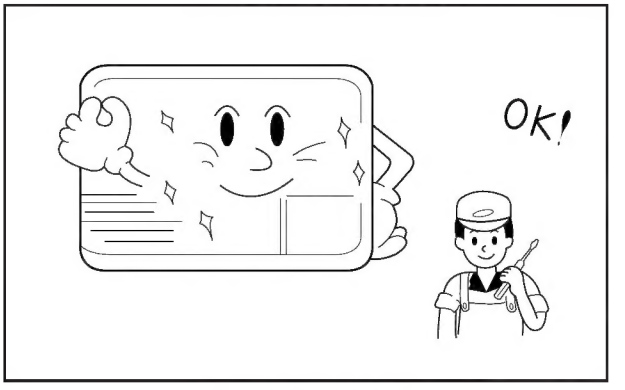


Fig. 1-4 Clean the Unit

2. Product Specifications

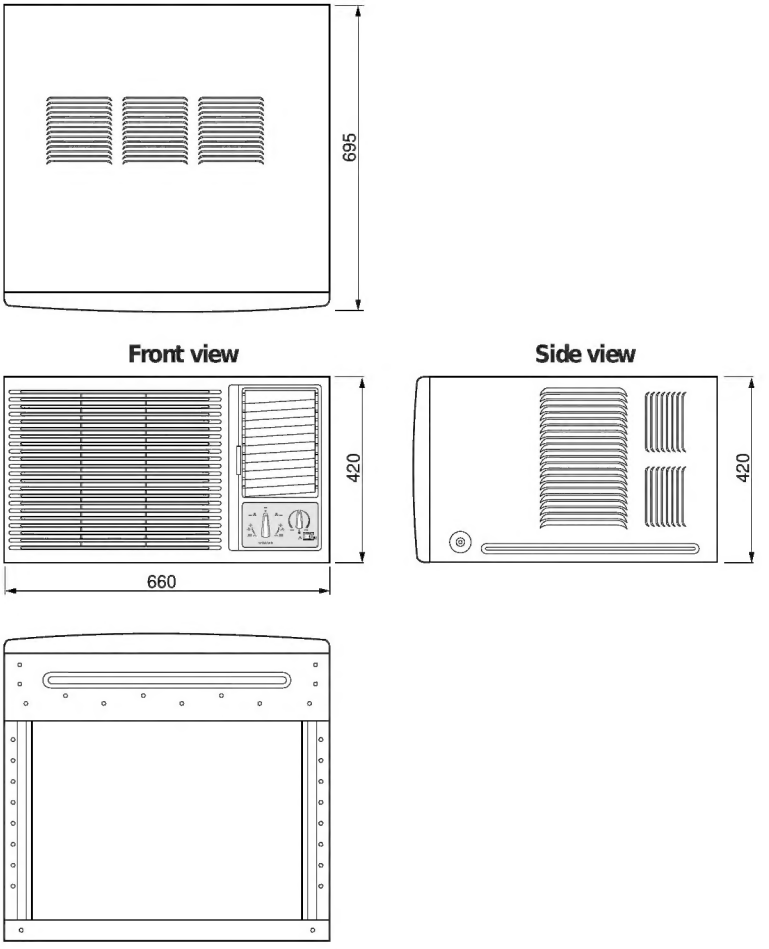
2-1 Table

Item	Unit of Measure	AWH-1808ER(Cooling/Heating)	Remarks
Type	-	Window	
Dimensions: (Width X Height X Depth)	mm	660 X 420 X 695	
Packing Size (Width X Height X Depth)	mm	737 X 476 X 794	
Voltage:	Volt	220 - 240	
Phase	-	Single	
Frequency	Hz	50	
Operating Current	A	9.0 / 7.7	
Power Consumption	W	2,050 / 1,730	
Refrigerant Type	FREON	R-22	
Refrigerant Charge	g	860	
Cooling Capacity	BTU/h	17,000 / 16,500	
EER	BTU/h.W	8.3 / 9.5	
Net Weight	kg	59	
Condenser	Row	2 X 16	
Condenser Fan	Type	Propeller Fan	
Evaporator	Row	3 X 14	
Evaporator Fan	Type	Blower	
Fan Motor	W	IC-13435SWJ5A	
Compressor(Rotary)	Model	48B180JV1E7	
Overload Protect	-	MRA12016-12007	
Compressor Capacitor	μF/VAC	40 / 450 (DUAL)	
Fan Motor Capacitor	μF/VAC	6 / 450	
Fan Speed Control	-	Fan speed switch (High & Low)	
Thermo Control	-	Thermistor	
OFF Timer	hr	24	

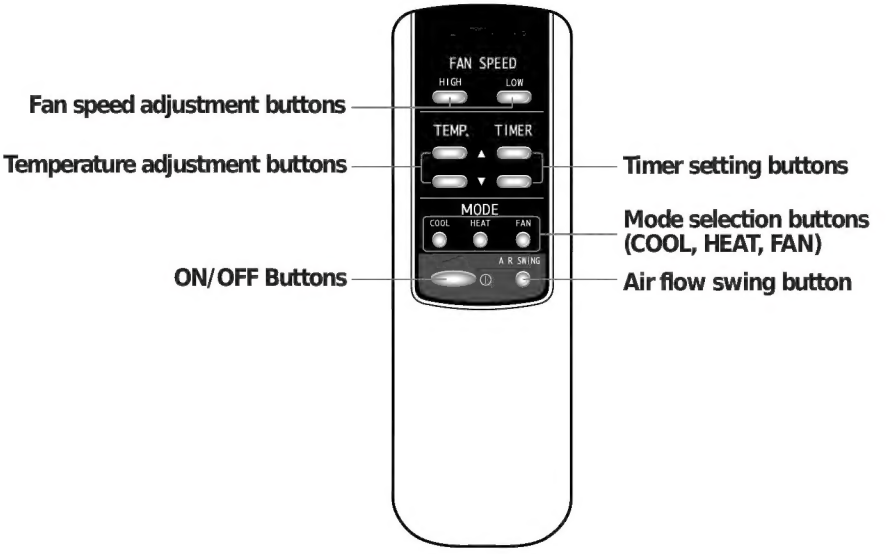
2-2 Dimensions

2-2-1 Main Unit

Unit : mm



2-2-2 Remote Control



3. Installation and Operating Instructions

3-1 Installation

* When selecting the area for installing the unit, be sure to obtain approval of the customer.

1. Make sure that you install the unit in an area that provides good ventilation.
   The air conditioner must not be blocked by any obstacle affecting the air flow near the air inlet and air outlet.

2. Make sure that you install the unit in an area which can endure the weight and vibration of the unit.

3. Make sure that you install the unit away from heat or vapor.

4. Make sure that you install the unit in an area where the cooled air can be evenly spread in a room.

5. Make sure that you install the unit in an area away from TVs, audio units, cordless phones, fluorescent lighting fixtures and other electrical appliances. (obtain a clearance of at least one meter)

6. Make sure that you install the unit in an area which provides easy drainage for condensed water.

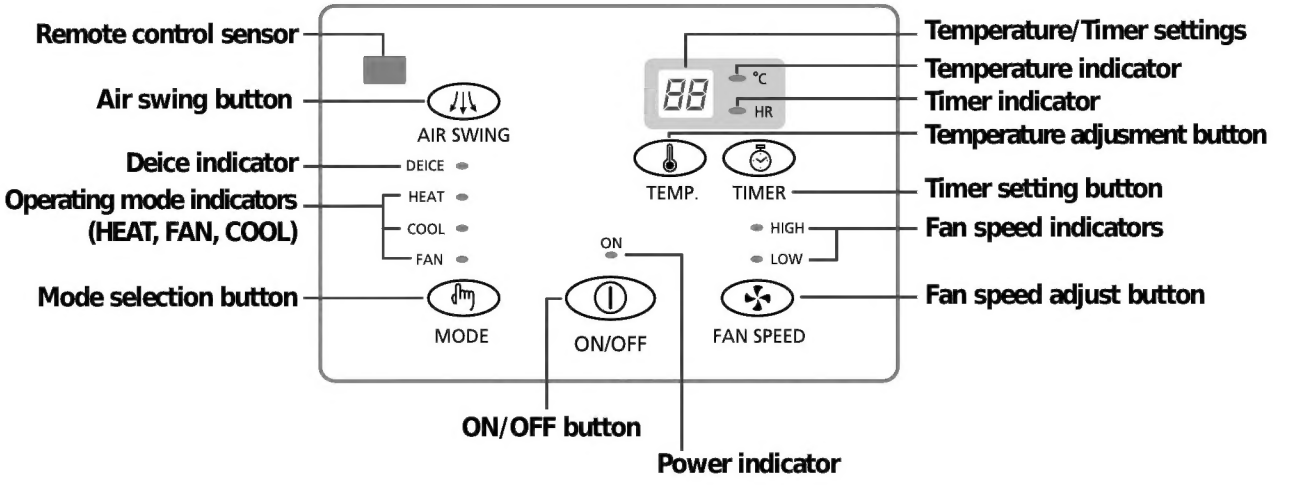
7. Make sure that you install the unit in an area not exposed to rain or direct sunlight.
   (Install a separate sunblind if exposed to direct sunlight.)

8. Do not install the unit in an area subjected to noise or vibration amplification which may affect your neighbor.
   (Fix the unit firmly if mounted in a high place.)

Caution:

Do not use the air conditioner in such areas as a greasy area(including machine oil), saline area(sea side), or sulphuric area(hot spring). When using the air conditioner in these areas, special maintenance is required. Contact your local dealer or our service center for advice.

3-2 Function Description



3-2-1 Cooling operation mode

The compressor is turned on and off according to the ambient temperature and set temperature.

1. Compressor on and off control
   - Compressor on and off control according to the ambient temperature.
     * The compressor is turned off when "ambient temperature = set temperature -1˚C"
     * The compressor is turned on when "ambient temperature = set temperature +1˚C"
2. Default value after power reset ➔ set temperature = 24˚C
   FAN SPEED = HIGH
3. Set temperature indicating (setting) range : 1˚C interval from 18˚C to 30˚C.

3-2-2 Heating operation mode

The compressor is turned on and off according to the ambient temperature and set temperature.

1. Compressor on and off control.
   - Compressor on and off control according to the ambient temperature.
     * The compressor is turned off when "ambient temperature = set temperature +1˚C"
     * The compressor is turned on when "ambient temperature = set temperature -1˚C"
2. Default value after power reset ➔ set temperature = 24˚C
   FAN SPEED = HIGH
3. Set temperature indicating (setting) range : 1˚C interval from 16˚C to 30˚C.

3-2-3 Fan operation mode

1. If "Fan operation mode" signal is received from remocon or panel.
   ➔ the compressor is immediately turned off and only fan motor is operated at set blowing speed.
   ➔ it changes such as "HIGH ➔ LOW ➔ HIGH"(if Fan speed is selected).
2. The initial FAN speed is set to "HIGH".
3. The set temperature can not be indicated and set.

3-2-4 LED lamp and LED display indication in case of error detection

ERROR OPERADTION	LED LAMP DISPLAY			7-SEG LED DISPLAY
	COOL	HEAT	FAN	
ROOM THERMISTOR (OPEN OR SHORT)	◐	×	×	E1 displayed
INDOOR PIPE THERMISTOR (OPEN OR SHORT)	◐	◐	×	E5 displayed
OUTDOOR PIPE THERMISTOR (OPEN OR SHORT)	◐	◐	◐	E6 displayed

Lamp ◐ —— blinking at every second (on for 0.5s and off for 0.5s)
× —— LED lamp off

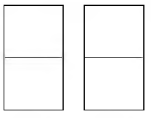
1. Set operation in case of error occurrence.
   - Malfunction of each temperature sensor (open, short)
     - Error mode display, warning sound.
     - The operation status is off.

2. The "outdoor pipe thermistor" error mode carry out checking only during heating operation and do nor carry out checking during and "FAN" operation.

3-2-5 Panel key operation

Key discription / Key name	Key operational function	Key Type
ON/OFF	Operation start and stop ∗ First ON = operation start, second ON = operation stop ∗ Continuous operation is not available.	TACT
Mode	Operation mode change (in case of model option heat pump) ∗ at every ON - Selected as "COOL –> HEAT –> FAN". (Default=COOL) ∗ If operation is OFF, it is considered as an invalid key. ∗ Continuous operation is not available.	TACT
Fan speed	Indoor fan speed setting. ∗ At every ON -> selected as "HIGH -> LOW -> HIGH". ∗ If operation is OFF, it is considered as an invalid key. ∗ Continuous operation is not available.	
Temp.	Currently displayed set temperature circulation (in case of option -> ℃) ∗ At every pressing, the set temperature is changed by 1℃ (cooling operation) (24℃ -> 25℃ -> 26℃ -> 27℃ —> 30℃ -> 18℃ -> 19℃ -> 20℃ —> 24℃). ∗ At every pressing, the set temperature is changed by 1℃ (heating operation) (24℃ -> 25℃ -> 26℃ -> 27℃ —> 30℃ -> 16℃ -> 17℃ -> 18℃ —> 24℃). ∗ Single and continuous operation is available. ∗ In case of the set temperature of 30℃, when the "increase" key is pressed by remocon, temperature does not increase any more and waring, sound is generated.(cooling, heating operation) –> The panel key is circulated continuously. ∗ If operation is OFF, it is considered as an invalid key. ∗ In case of fan speed operation, it is considered as an invalid key. Currently displayed set temperature circulation (in case of option –> ℉) ∗ At every pressing, the set temperature is changed by 1℉ (cooling operation) (75℉ -> 76℉ -> 77℉ —> 86℉ -> 64℉ -> 65℉ -> 66℉ -> 67℉ —> 75℉). ∗ At every pressing, the set temperature is changed by 1℉ (heating operation) (75℉ -> 76℉ -> 77℉ —> 86℉ -> 61℉ -> 62℉ -> 63℉ -> 64℉—> 75℉). ∗ Single and continuous operation is available. ∗ In case of the set temperature of 86℉, when the "Increase" key is pressed by remocon, temperature does not increase any more and warning, sound is generated.(cooling, heating operation) –> The panel key is circulated continuously. ∗ If operation is OFF or fan speed, it is considered as an invalid key.	TACT
Air swing	Left and right swing motor operation and stop. ∗ Once ON = Left and right swing motor operation, Another ON = Left and right swing motor stop. ∗ In case of cool blowing inhibition, it is considered as an invalid key. (only in fan motor OFF range) ∗ In case of defrosting operation, it is considered as an invalid key. (only in fan motor OFF range) ∗ Continuous operation is not available. ∗ In case of operation stop, when the fan motor is turned off it is considered as an invalid key. ∗ In case of deicing operation, the left and right swing motor does not operate. (it operates when the fan motor is being operated)	TACT
Timer	Time increase by the convenient reserve (OFF TIMER) time control key. ∗ At every pressing the time is increased by 1 hour. (--> 01 -> 02 -> 03 -> 04 -> 05 ---> 18 -> 19 -> 20 -> 21 -> 24 -> --) ∗ "--" means that the convenient reserve time is not set yet. (convenient reserve cancelled) ∗ Single and continuous operation is available. ∗ If operation is OFF, it is considered as an invalid key.	TACT

3-2-6 LED lamp operation specifications

LAMP name	Operations specifications
ON	Operation ON condition : ON Operation OFF condition : OFF Blinking just after resetting : Automatic stop after turning on for 0.5 s and off for 0.5s for 3 minutes(if the operation/stop key is not pressed for 3 minutes).
COOL	The mode is set to 'COOL" -> ON Others -> OFF
HEAT	The mode is set to 'HEAT" -> ON Others -> OFF
FAN	The mode is set to 'FAN" -> ON Others -> OFF
HIGH	The fan speed is set to 'HIGH" -> ON Others -> OFF
LOW	The fan speed is set to 'LOW" -> ON Others -> OFF
˚C	The set temperature is displayed or set -> ON Others -> OFF
HR	During setting of the convenient reserve (OFF TIMER) time -> blinking After setting of the convenient reserve (OFF TIMER) time -> ON Others -> OFF
DEICE	Till the "deicing" operation is completed during heating opertion -> ON Others -> OFF
 (1) (2)	In case of (set) temperature display -> NO. (1) 7 seg. LED display indicates temperature of the tens digit (˚C, ˚F) -> NO. (2) 7 seg. LED display indicates temperature of the units digit (˚C, ˚F) In case of time (OFF TIMER) display -> NO. (1) 7 seg. LED display indicates time of the tens digit -> NO. (2) 7 seg. LED display indicates time of the units digit

3-2-7 Resistor and voltage values table of room thermistor, indoor thermistor and outdoor thermistor for each temperature

Temperature [℃]	THERMISTOR [Kohm]	Voltage [DC V]
70	1.670	0.715
69	1.729	0.737
68	1.791	0.759
67	1.855	0.782
66	1.922	0.806
65	1.992	0.830
64	2.065	0.855
63	2.141	0.881
62	2.220	0.908
61	2.303	0.936
60	2.390	0.964
59	2.480	0.993
58	2.574	1.023
57	2.672	1.054
56	2.775	1.086
55	2.882	1.118
54	2.994	1.152
53	3.111	1.186
52	3.234	1.221
51	3.362	1.258
50	3.496	1.295
49	3.635	1.333
48	3.780	1.371
47	3.932	1.411
46	4.091	1.451
45	4.257	1.493
44	4.432	1.535
43	4.614	1.578
42	4.806	1.623
41	5.007	1.668
40	5.217	1.741
39	5.438	1.761
38	5.669	1.809
37	5.912	1.857
36	6.167	1.907
35	6.435	1.957
34	6.716	2.008
33	7.012	2.060
32	7.322	2.113
31	7.649	2.167
30	7.993	2.221

Temperature [℃]	THERMISTOR [Kohm]	Voltage [DC V]
29	8.354	2.275
28	8.734	2.331
27	9.135	2.387
26	9.556	2.443
25	10.00	2.500
24	10.46	2.556
23	10.94	2.612
22	11.45	2.669
21	11.99	2.726
20	12.55	2.782
19	13.15	2.840
18	13.78	2.897
17	14.44	2.954
16	15.14	3.011
15	15.88	3.068
14	16.66	3.124
13	17.48	3.180
12	18.36	3.237
11	19.28	3.292
10	20.25	3.347
9	21.28	3.401
8	22.38	3.455
7	23.54	3.509
6	24.76	3.561
5	26.06	3.613
4	27.44	3.664
3	28.90	3.714
2	30.45	3.763
1	32.10	3.812
0	33.85	3.859
-1	35.66	3.904
-2	37.59	3.949
-3	39.64	3.992
-4	41.82	4.035
-5	44.14	4.076
-6	46.60	4.116
-7	49.22	4.155
-8	52.01	4.193
-9	54.98	4.230
-10	58.14	4.266

3-2-8 About the safety devices

1. High temperature release : If temperature of the indoor pipe thermistor increases over the specified value during heating operation, following operation is carried out for safety of the equipment.

   A condition : temperature of indoor pipe thermistor is below 47˚C
   B condition : temperature of indoor pipe thermistor is between 58˚C and 63˚C
   C condition : temperature of indoor pipe thermistor is over 63˚C

   1) High temperature release operation OFF condition = A condition
      -> compressor ON (only in THERMO ON condition)
      -> fan motor speed = set fan speed and cool blowing inhibiting operation
   2) High temperature release operation ON condition = B condition
      -> compressor ON
      -> fan motor speed = HIGH operation if it was LOW
                         = HIGH operation if it was HIGH
   3) High temperature release operation ON condition = C condition
      -> fan motor speed = set fan speed
      -> compressor OFF

2. Low temperature release : If temperature of the indoor pipe thermistor decreases below the specified value during cooling operation, following operation is carried out for safety of the equipment.

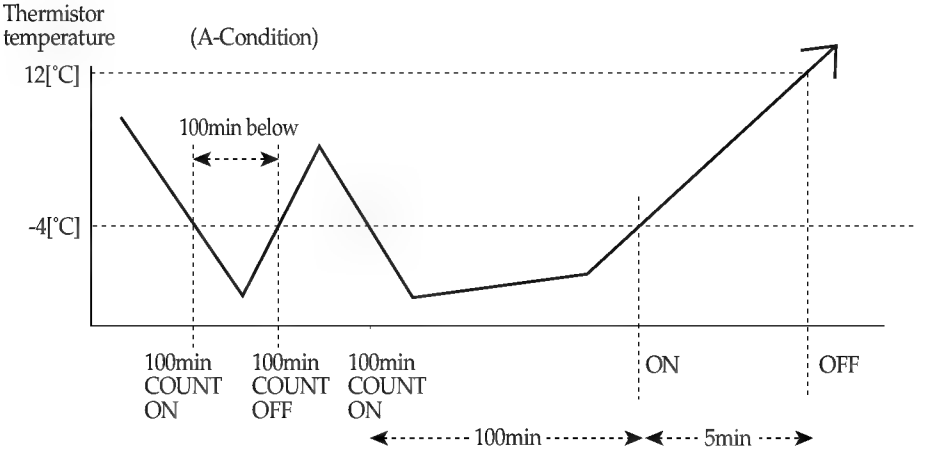
   A condition : temperature of indoor pipe thermistor is below -1˚C for more than 6 minutes
   B condition : temperature of indoor pipe thermistor is over 5˚C

   1) Low temperature release ON condition = A condition
      -> compressor OFF
      -> fan motor "set fan speed"
   2) Low temperature release OFF condition = B condition
      -> The compressor is turned on if ON condition is satisfied after comparing the ambient temperature with the set temperature
      -> fan motor "set fan speed"

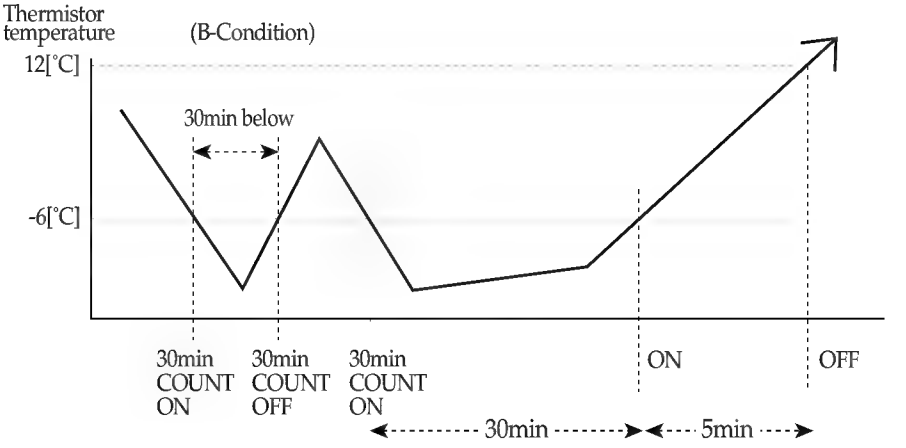
[Detailed description]
   1) If temperature of indoor pipe thermistor is below -1˚C for more than 6 minutes, the fan motor continues to operate at the set fan speed and the compressor is turned off(Low temperature release operation)
   2) If temperature of the indoor pipe thermistor increases over +5˚C during low temperature release operation, normal operation is recovered
      : compressor ON, fan mtor set fan speed -> Low temperature release operation OFF
   3) If temperature of indoor pipe thermistor increases over 0˚C during counting 6 minutes below -1˚C, the counter is reset.

3. Deicing operation : If temperature of the outdoor pipe thermistor decreases below the specified value during heating operation, following operation is carried out for safety of the equipment.

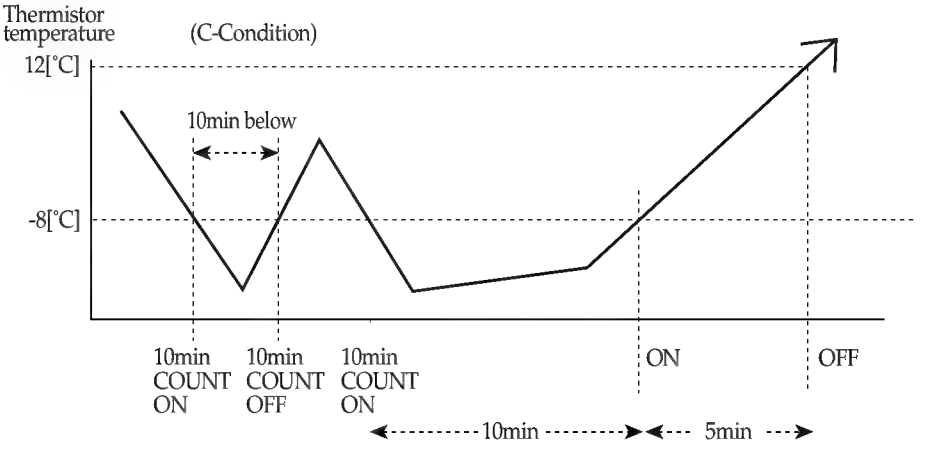
OUTDOOR PIPE



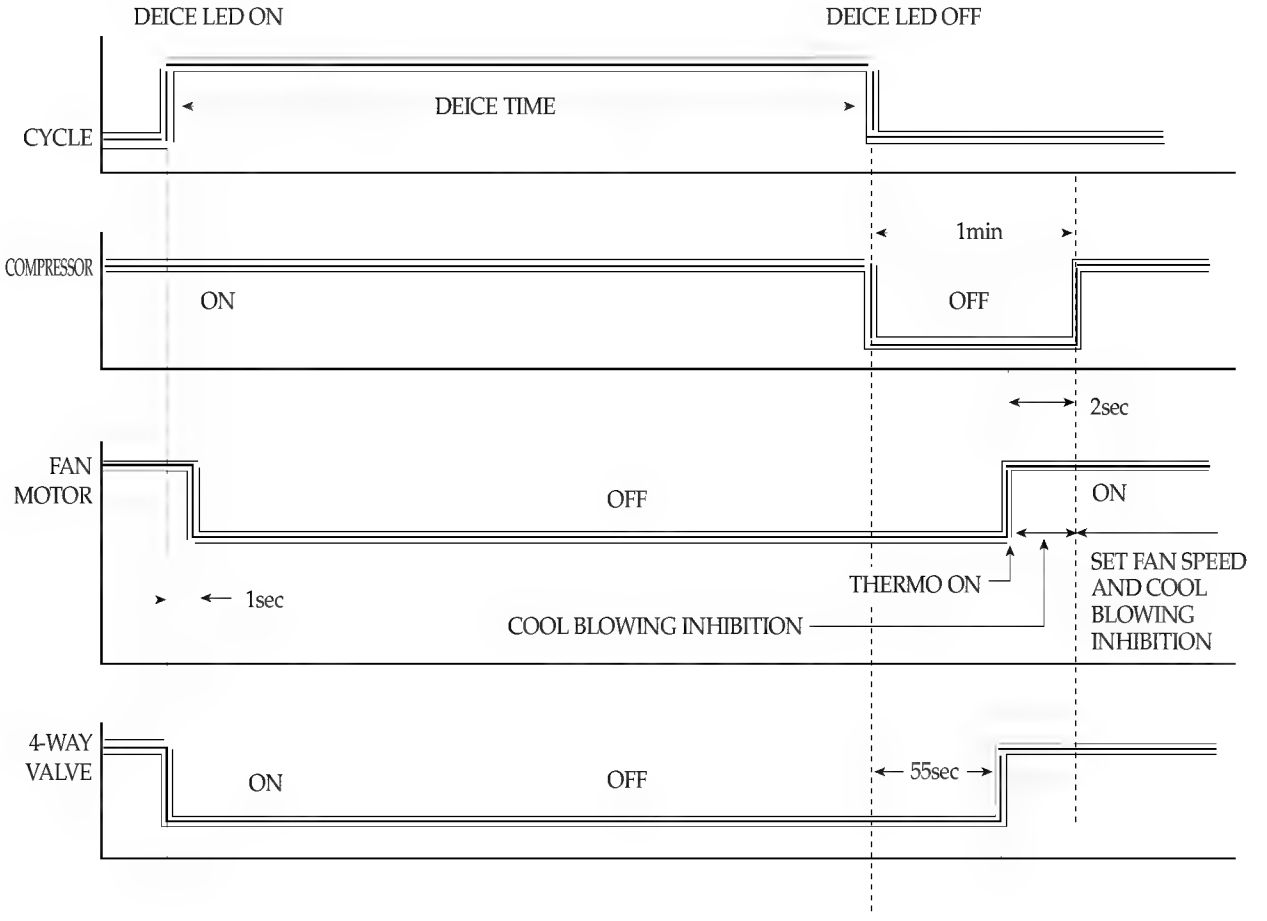
OUTDOOR PIPE



OUTDOOR PIPE

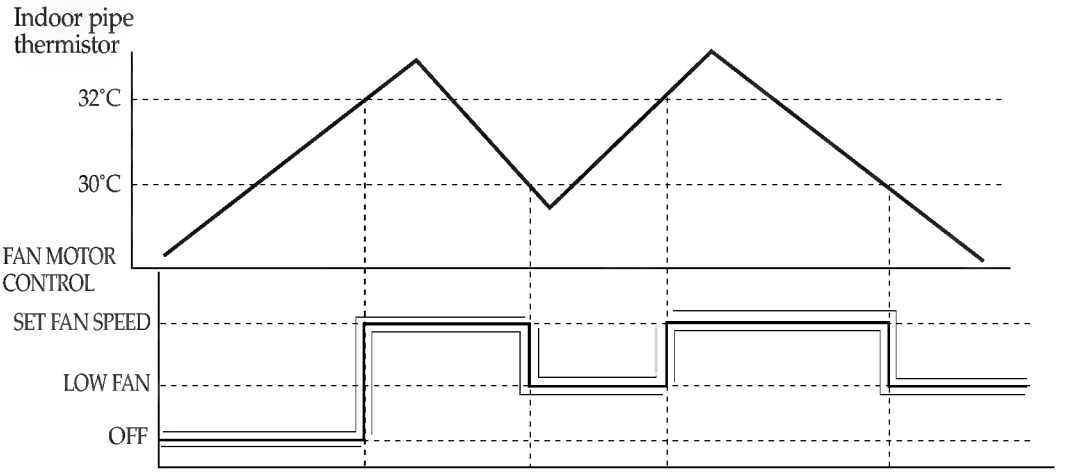


1) Deicing detecting condition
   - If one of A, B and C conditions is satisfied, deicing operation is carried out.(AUBUC)
   - If counting time is overlapped due to detection reference temperature change during counting of the deicing condition, deicing operation starts when the counting time is finished first.
   - The maximum counting time is 100 minutes.
     - During deicing operation, the left and right swing motor is turned off and stops at the position before swing.
     - If operation is turned off during deicing operation, it is finished and the compressor is turned off.
     -> Deice lamp ON, fan motor OFF.
2) Display indication.
   - The deice lamp is turned on additionally during deicing cycle.
   - Only the deice lamp is turned off when deicing is finished.
3) In case of turning off during deicing operation.
   - The compressor is turned off after finishing the deicing operation.
   - The deice lamp is turned on during deicing cycle and is turned off when deicing is finished.
4) In case of changing mode to cooling operation during deicing operation.
   - Cooling operation is carried out after carrying out deicing operation.
   - After the compressor is turned off and 3 minutes is passed, it is restarted.
5) Load operation during deicing operation.

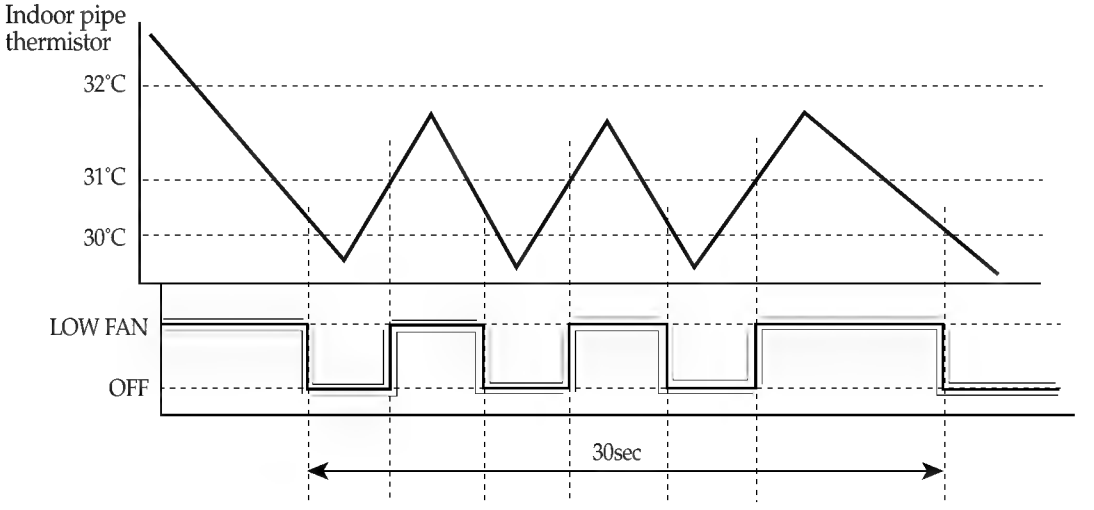


4. Cool blowing inhibiting control : In order to inhibit cool blowing during heating operation, the fan motor is operated when temperature of the indoor pipe thermistor is above the specified value.
   • The fan motor speed is controlled according to the temperature of condition of the indoor pipe thermistor.

< Compressor OFF -> Compressor ON >



< Compressor ON -> Compressor OFF >



1) When the indoor pipe thermistor temperature is increasing
   indoor pipe thermistor temperature = below 32°C –> fan motor OFF
   indoor pipe thermistor temperature = over 32°C –> fan motor speed "set blower speed"
2) When the indoor pipe thermistor temperature is decreasing
   indoor pipe thermistor temperature = over 30°C –> fan motor speed "set blower speed"
   indoor pipe thermistor temperature = below 30°C –> fan motor speed "Low"
3) But if the compressor is operating, the fan motor is not turned off but is operated weakly even if the indoor pipe thermistor temperature decreases.

< Compressor ON -> Compressor OFF >

indoor pipe thermistor temperature = below 30°C –> fan motor speed "Low"
indoor pipe thermistor temperature = over 30°C –> fan motor OFF
30s is passed after compressor is turned off --> fan motor OFF

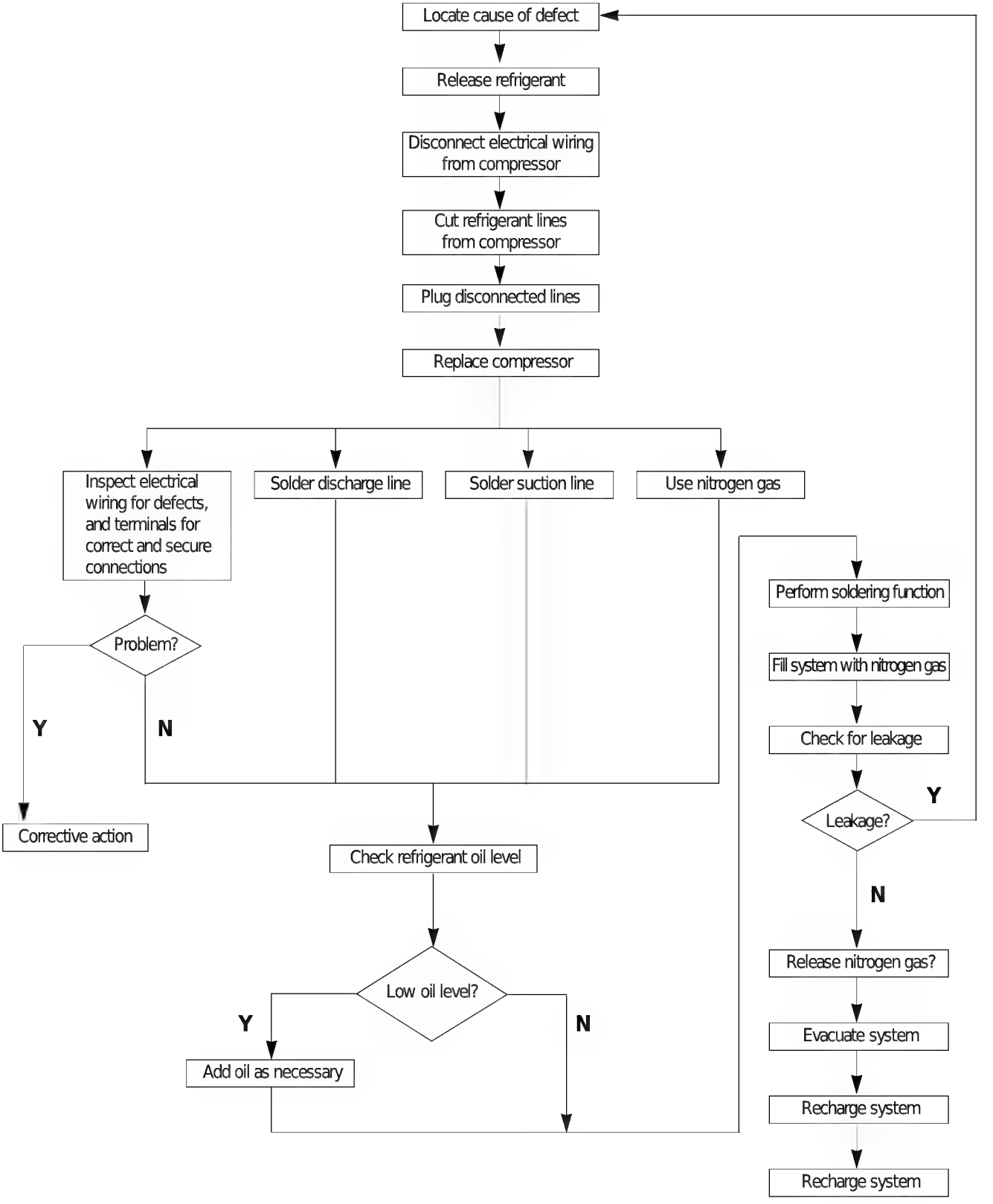
3-2-9 Compressor delayed operation and 4-way valve delayed operation :

The compressor is turned on after 3 minutes from power resetting or compressor turning off during cooling or heating operation.

1) The compressor can be turned on after "3 minutes delay" from power resetting or compressor turning off.
2) The 4 way valve is turned off/on after "2 minutes and 55 seconds delay" in the on/off condition. (during heating operation)
3) The operation is stopped after "2 minutes and 55 seconds delay" in the off condition when the 4 way valve is turned on.

4. Disassembly and Reassembly

4-1 Compressor Replacement Flow Chart



4-2 Checking the oil

Fill the transparent container with 10cc of oil, and then conduct the test.

4-2-1 Oil quality

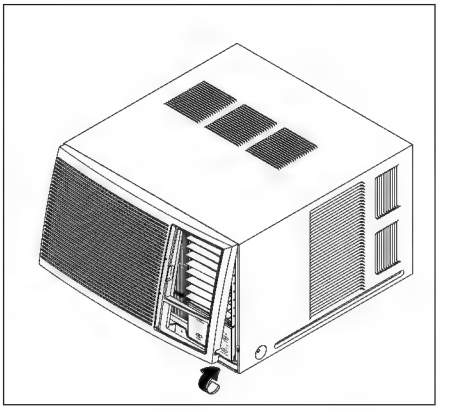
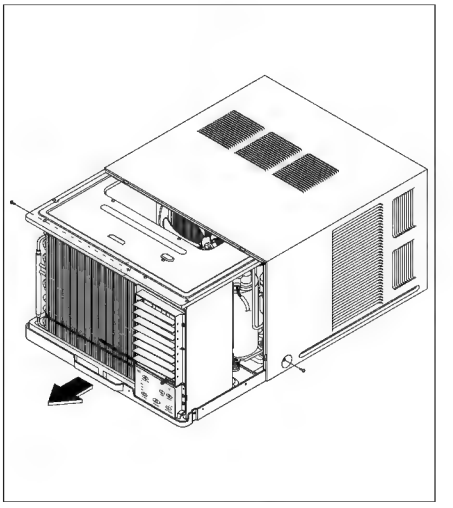
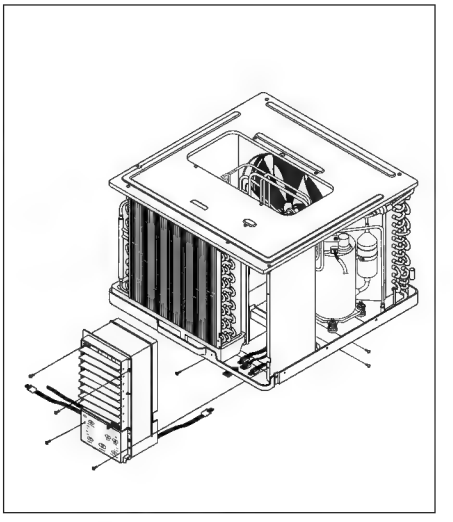
Refrigerant Cycle	Oil Condition		Remarks
	Color	Odor	
Normal	Light Yellow	No Odor	Return with the system
Over-heated	Brown	-	Oil Change
Compressor damage	Dark brown	Pungent oil	Oil Change

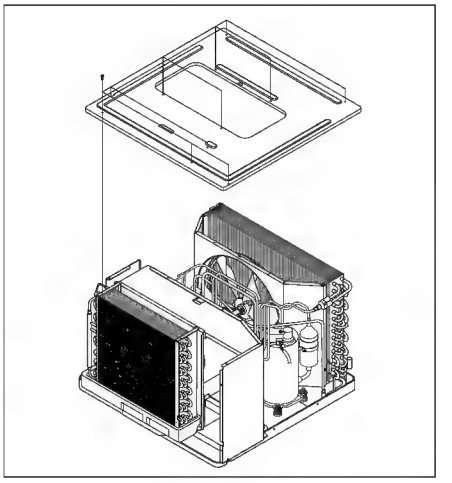
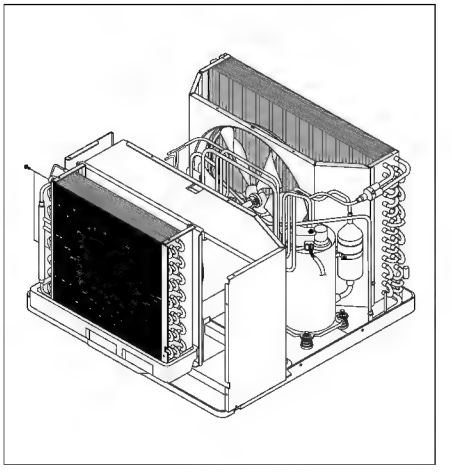
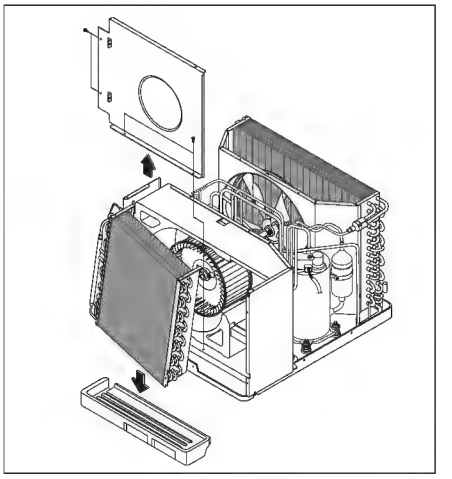
4-2-2 Replacing and refilling the refrigerant oil

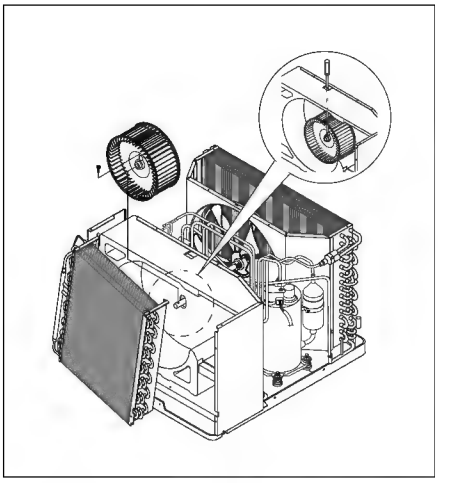
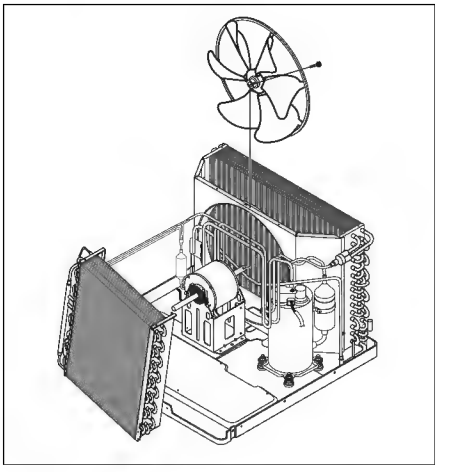
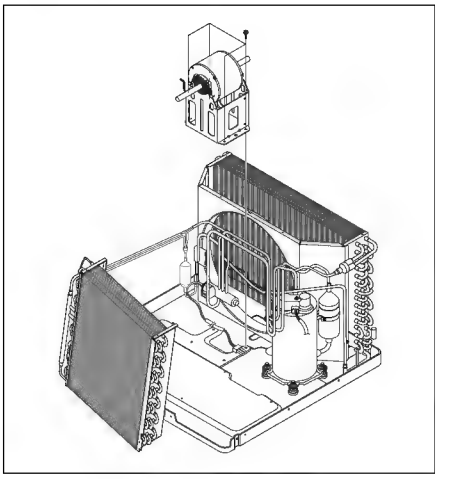
1. Replacing the compressor - Do not fill the system with oil as the compressor is already charged.
2. Replacing the condenser - Refill 50cc.
3. Replacing the evaporator - Refill 50cc.
4. Replacing the refrigerant - Refill 30cc.
5. The high pressure side is filled up with oil after the vacuum is completed.
6. When the refrigerant leaks, it is generally not necessary to refill the oil if the leakage is not severe.

4-3 Disassembly and Reassembly Procedure

Stop operating the air conditioner, and pull out the power cord before repair.

No.	Part name	Procedures	Remarks
①	Ass'y Grill	1. Hold the lower part of the grill with two hands while pressing down on both sides of the lower part of the cabinet, pull it forward by about 30°, and then lift it up for removal.	
②	Ass'y Cabinet	1. Remove the screws on both sides of the cabinet to disconnect the cabinet and frame. 2. Pull the handle on the front side of the bottom, and remove the unit from the cabinet.	
③	Ass'y Control	1. Remove four machine screws, and earth wire screw. 2. Remove three lead wire assemblies and the deice sensor from the condenser, and remove two screw on the partition cover. 3. Take out the control box forward.	

No.	Part name	Procedures	Remarks
④	Plate-Cover	1. Remove 11 screws on the plate cover.	
⑤	Ass'y-Evaporator	1. Remove two screws on the left side of the evaporator.	
⑥	Plate-Evap Casing	1. Lift up the evaporator, and remove the tray drain. 2. Remove two screws on the bottom side, and two screws on the left side of the plate evap casing.	

No.	Part name	Procedures	Remarks
⑦	Blower	1. Loosen the hexagon nut, and remove the blower.	
⑧	Propeller Fan	1. Loosen the hexagon nut, and remove the propeller fan.	
⑨	Motor Supporte & Motor	1. Remove four hexagon nuts on the base pan. 2. Move the motor-assembly toward the condenser, and lift up the motor-assembly from the frame. 3. Remove the clips on both sides carefully using the (-) driver.	

5. Troubleshooting

Check the basic checkpoints first to determine whether it is machine trouble or a problem in the operation method. When it is not related to the basic checkpoints, perform checking in accor dance with the procedures of troubleshooting by symptom.

5-1 Basic Checkpoints for Troubleshooting

1) Is the voltage of the power source appropriate ?
   (1)It should be within the range of AC 198V ~ 264V.
   (2)The air conditioner may not operate properly when the voltage is out of this range.
2) Is the connection with the fan motor, compressor wire, and starting condenser appropriately made ?
3) The symptoms listed in the table below are not indicative of machine trouble.

Symptom	Cause and check
No operation	• Check whether there is power failure or the power plug is pulled out. • Check whether the unit is stopped as a result of completion of the sleep time. • Pull out the power plug for ten seconds, and then insert it again.
Air flows, but no cooling no Heating	• Check whether the Air filter is clogged with dust or is dirty. • Check whether the desired temperature is too high. Set the desired temperature to a lower level than the current temperature.(Cooling) • Check whether it is in "FAN" mode. • Check whether the desired temperature is too low. Set the desired temperature to a higher level than the current temperature.(Heating) • Check whether the unit is deicing.
The remocon does not operate	• Check whether battery is completely depleted. • Check whether the battery is properly inserted. • Check whether the receiving window of the remocon for the assembly panel PCB is blinded. • Check whether the remocon is affected by jamming due to a neon sign.
No temperature setting	• Check whether the unit is in "FAN" mode. (In "FAN" mode, only the current temperature is displayed, and the desired temperature is not set.)
The "ON" lamp blinks continuously	• Press the ON/OFF button again. • Pull out the power plug, and then insert it again.

• Checking and Display of Fault Area

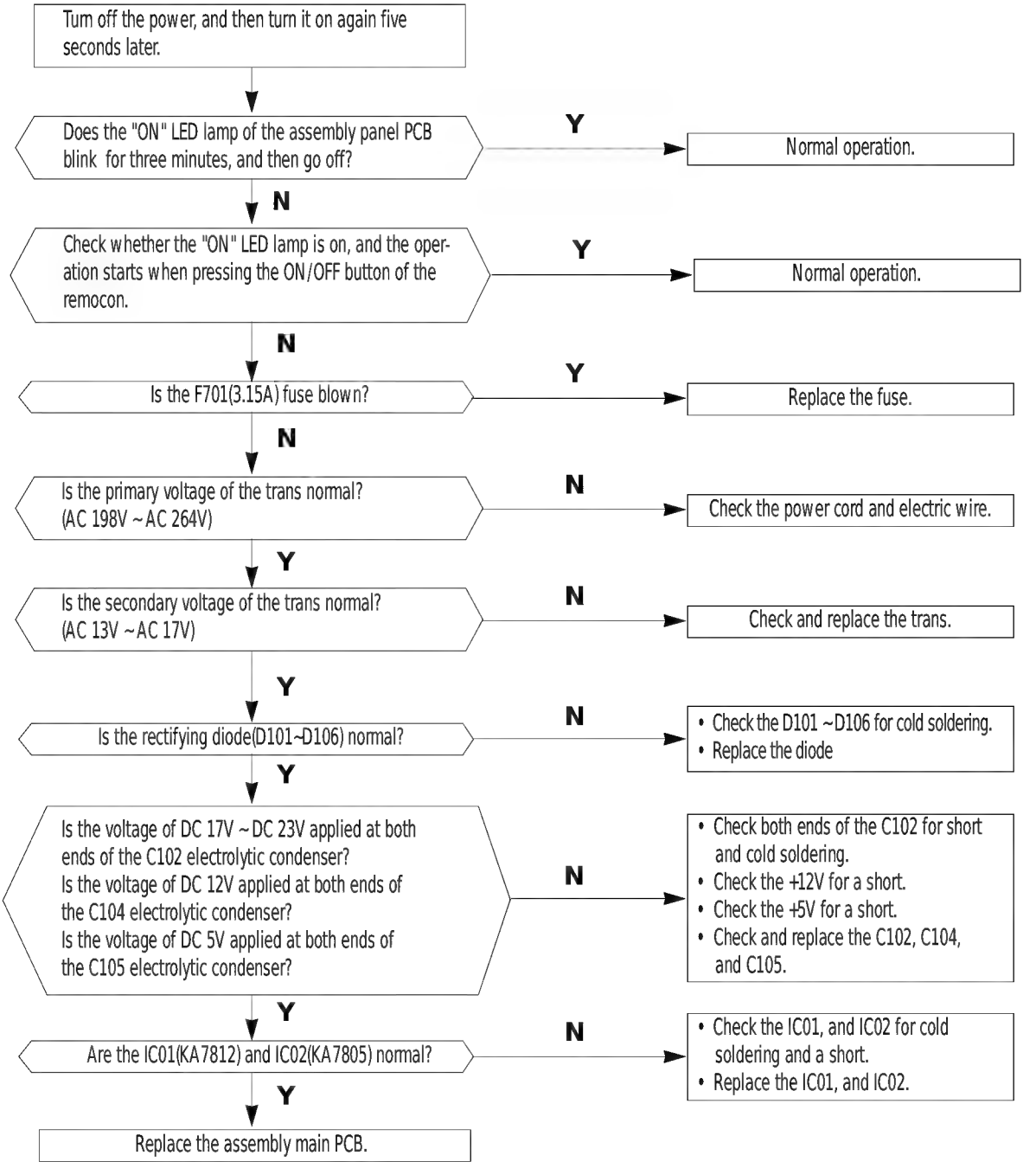
ERROR OPERATION	LED LAMP			7-SEG LED DISPLAY
	COOL	HEAT	FAN	
ROOM THERMISTOR (OPEN OR SHORT)	◐	×	×	E1 displayed
INDOOR PIPE THERMISTOR (OPEN OR SHORT)	◐	◐	×	E5 displayed
OUTDOOR PIPE THERMISTOR (OPEN OR SHORT)	◐	◐	◐	E6 displayed

* Lamp ◐ — blinking at every second (on for 0.5s and off for 0.5s)
× — LED Lamp off

5-2-1 No power

1) Check points

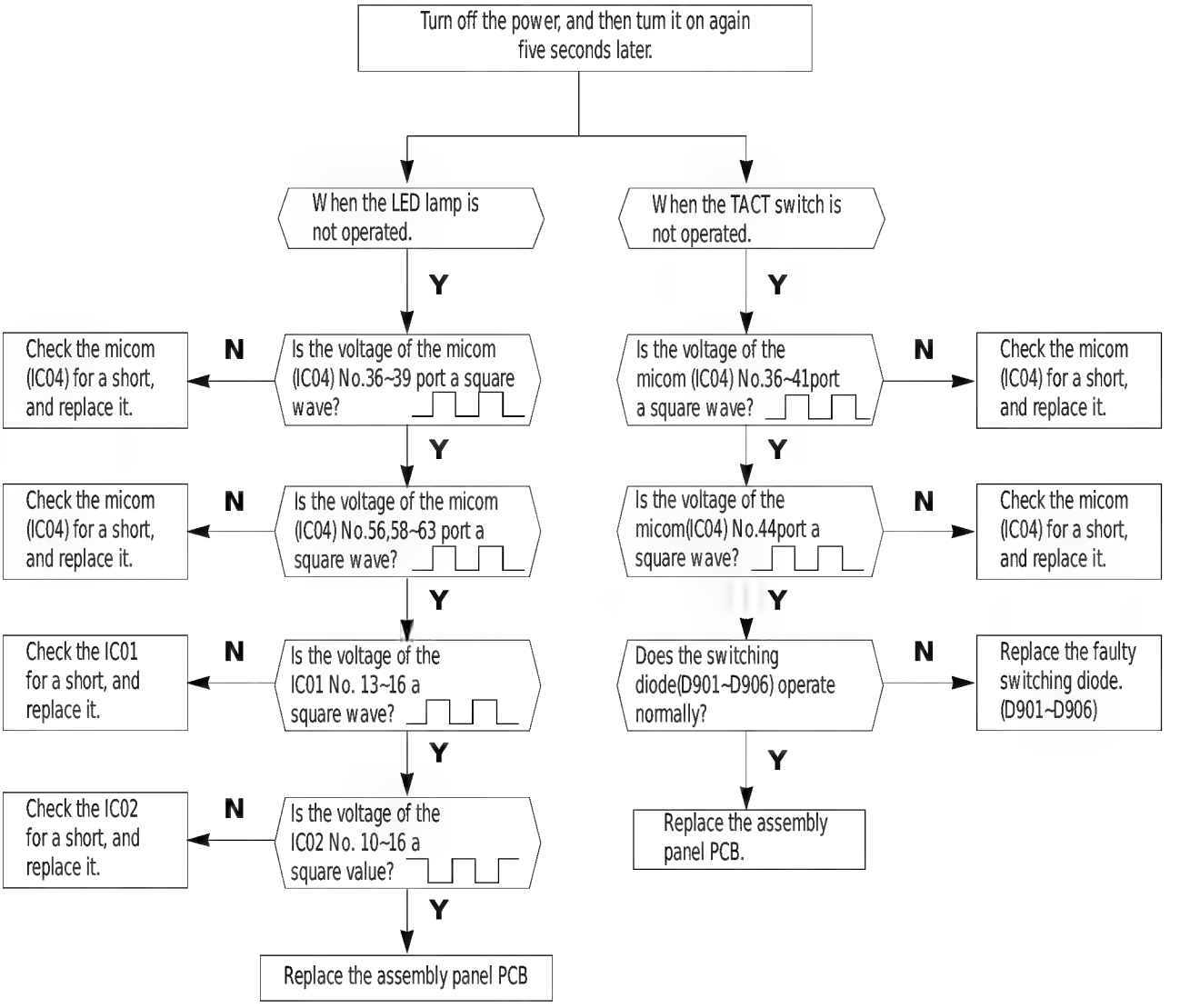
(1) Is the voltage of the power source normal ? (AC 198V ~ AC 264V)
(2) Is the electric wire in good contact ?(CN 71, RY 71)
(3) Is the output voltage of the IC01(KA 7812) normal ?(DC 11.5V ~ DC 12.5V)
(4) Is the output voltage of the IC02(KA 7805) normal ?(DC 4.5V ~ DC 5.5V)


Turn off the power, and then turn it on again five seconds later.
Does the "ON" LED lamp of the assembly panel PCB blink for three minutes, and then go off?
Y
Normal operation.
N
Check whether the "ON" LED lamp is on, and the operation starts when pressing the ON/OFF button of the remocon.
Y
Normal operation.
N
Is the F701(3.15A) fuse blown?
Y
Replace the fuse.
N
Is the primary voltage of the trans normal? (AC 198V ~ AC 264V)
N
Check the power cord and electric wire.
Y
Is the secondary voltage of the trans normal? (AC 13V ~ AC 17V)
N
Check and replace the trans.
Y
Is the rectifying diode(D101~D106) normal?
N
• Check the D101 ~D106 for cold soldering.
• Replace the diode
Y
Is the voltage of DC 17V ~ DC 23V applied at both ends of the C102 electrolytic condenser?
Is the voltage of DC 12V applied at both ends of the C104 electrolytic condenser?
Is the voltage of DC 5V applied at both ends of the C105 electrolytic condenser?
N
• Check both ends of the C102 for short and cold soldering.
• Check the +12V for a short.
• Check the +5V for a short.
• Check and replace the C102, C104, and C105.
Y
Are the IC01(KA7812) and IC02(KA7805) normal?
N
• Check the IC01, and IC02 for cold soldering and a short.
• Replace the IC01, and IC02.
Y
Replace the assembly main PCB.

5-2-2 When the assembly panel PCB is not operated

1) Check points

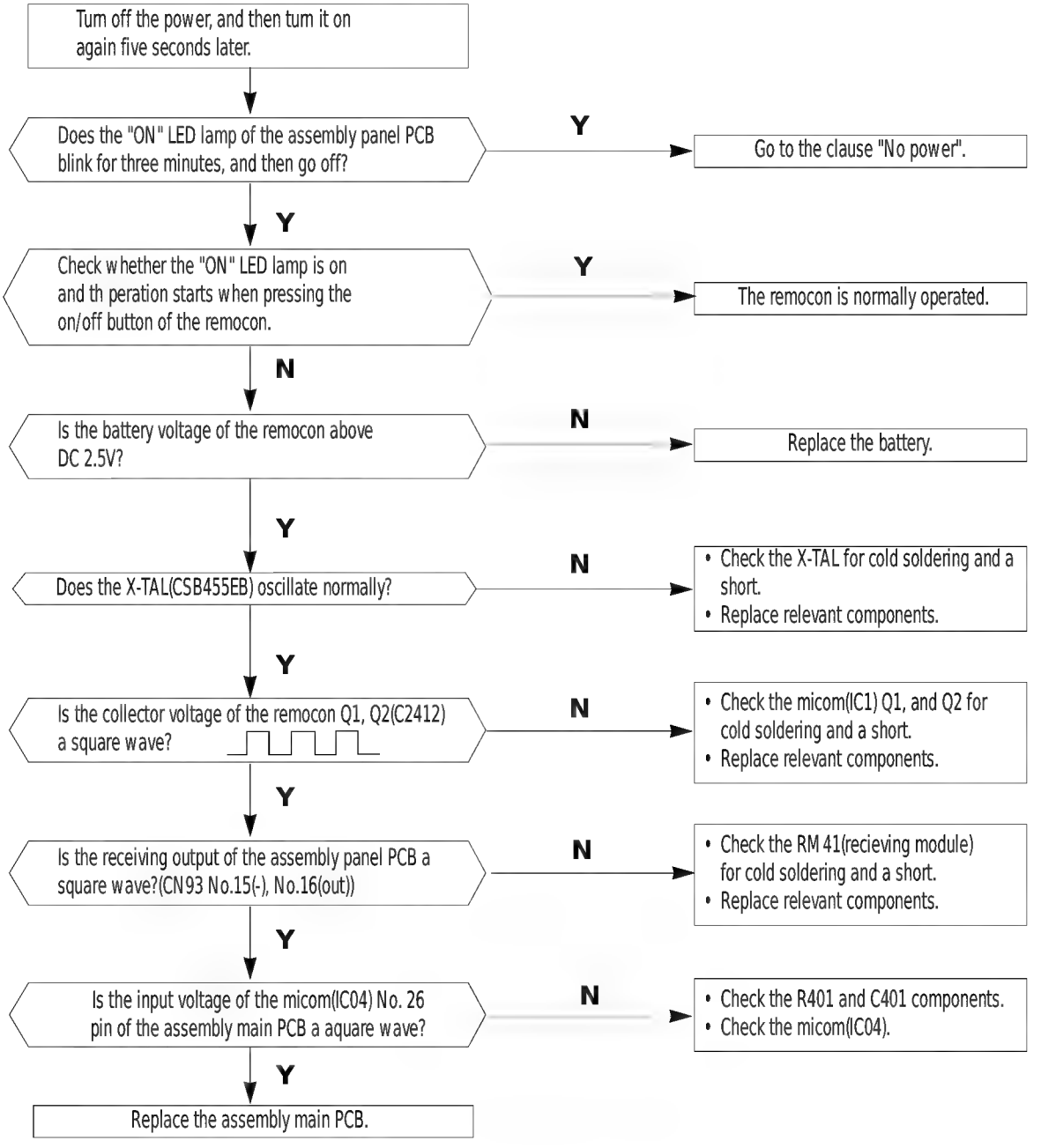
(1) Is the voltage of the power source normal ?(AC 198V ~ AC 264V)
(2) Is the electric wire in good contact ?(CN71, RY71)
(3) Is the connection of the assembly main PCB, and assembly panel PCB in good contact? (CN91, CN92)
(4) Is the voltage of +12V normal ?(CN91 and CN 92 No 15 pin and No 18 pin : +12V±0.5V)
(5) Is the TACT switch of the Ass'y panel PCB pressed above 2 ea?


Turn off the power, and then turn it on again five seconds later.
When the LED lamp is not operated.
When the TACT switch is not operated.
Y
Y
Check the micom (IC04) for a short, and replace it.
N
Is the voltage of the micom (IC04) No.36~39 port a square wave?
Is the voltage of the micom (IC04) No.36~41port a square wave?
N
Check the micom (IC04) for a short, and replace it.
Y
Y
Check the micom (IC04) for a short, and replace it.
N
Is the voltage of the micom (IC04) No.56,58~63 port a square wave?
Is the voltage of the micom(IC04) No.44port a square wave?
N
Check the micom (IC04) for a short, and replace it.
Y
Y
Check the IC01 for a short, and replace it.
N
Is the voltage of the IC01 No. 13~16 a square wave?
Does the switching diode(D901~D906) operate normally?
N
Replace the faulty switching diode. (D901~D906)
Y
Y
Check the IC02 for a short, and replace it.
N
Is the voltage of the IC02 No. 10~16 a square value?
Replace the assembly panel PCB.
Y
Replace the assembly panel PCB

5-2-3 When the remocon is not operated

1) Check points

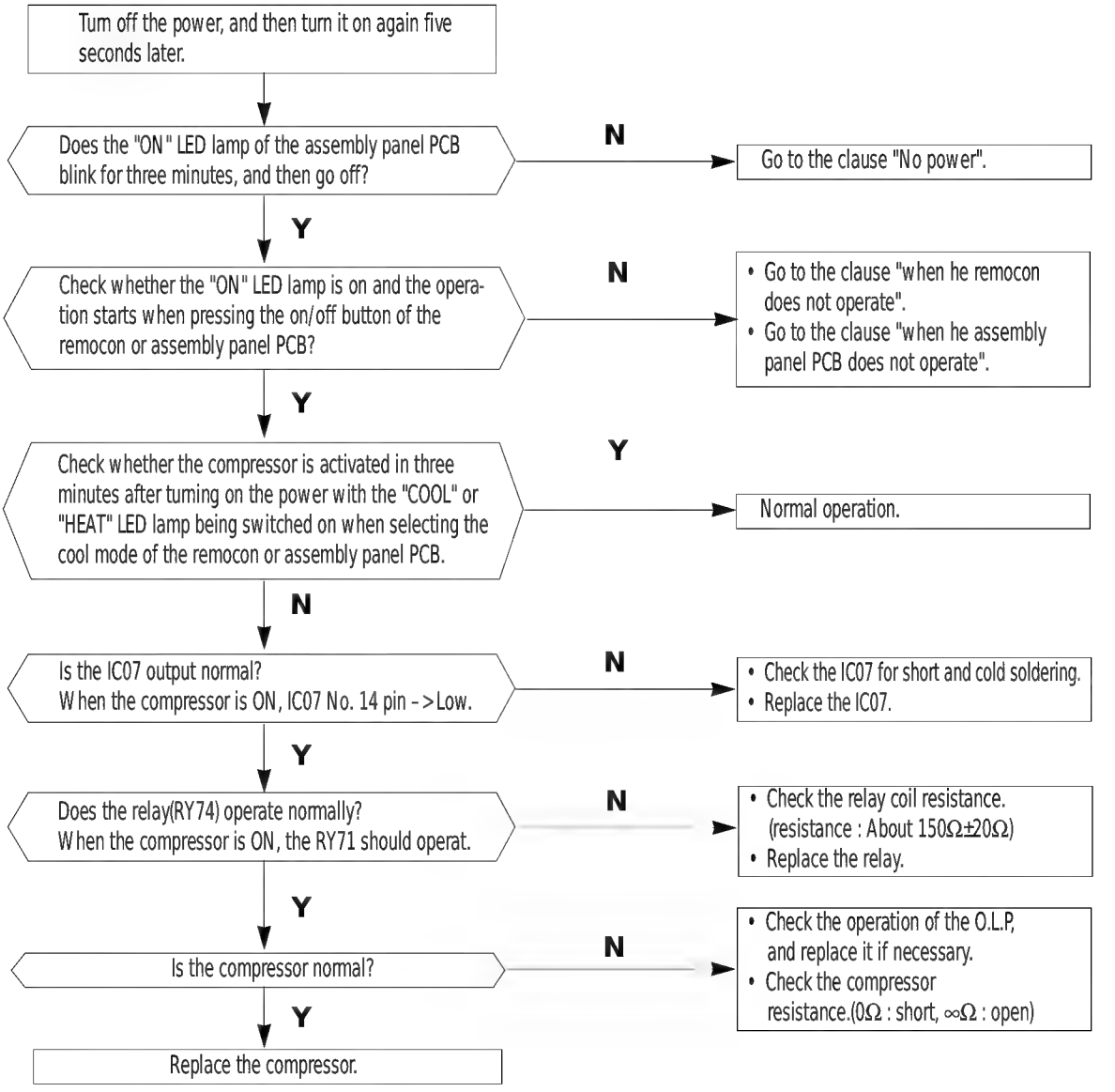
(1) Is the voltage of the power source normal ? (AC 198 ~ AC 264V)
(2) Is the electric wire in good contact ? (CN71, RY71)
(3) Is the assembly main PCB in good contact with the assembly panel PCB?(CN91, CN92)
(4) Is the voltage of +12V and +5V of the assembly panel PCB normal?
(CN91 No 15 pin and No 18 pin : +12V, No 15 pin and No 17 pin : +5V)


Turn off the power, and then turn it on again five seconds later.
Does the "ON" LED lamp of the assembly panel PCB blink for three minutes, and then go off?
Y
Go to the clause "No power".
Y
Check whether the "ON" LED lamp is on and th peration starts when pressing the on/off button of the remocon.
Y
The remocon is normally operated.
N
Is the battery voltage of the remocon above DC 2.5V?
N
Replace the battery.
Y
Does the X-TAL(CSB455EB) oscillate normally?
N
• Check the X-TAL for cold soldering and a short.
• Replace relevant components.
Y
Is the collector voltage of the remocon Q1, Q2(C2412) a square wave?
N
• Check the micom(IC1) Q1, and Q2 for cold soldering and a short.
• Replace relevant components.
Y
Is the receiving output of the assembly panel PCB a square wave?(CN93 No.15(-), No.16(out))
N
• Check the RM 41(recieving module) for cold soldering and a short.
• Replace relevant components.
Y
Is the input voltage of the micom(IC04) No. 26 pin of the assembly main PCB a aquare wave?
N
• Check the R401 and C401 components.
• Check the micom(IC04).
Y
Replace the assembly main PCB.

5-2-4 Wen the compressor is not operated

1) Check points

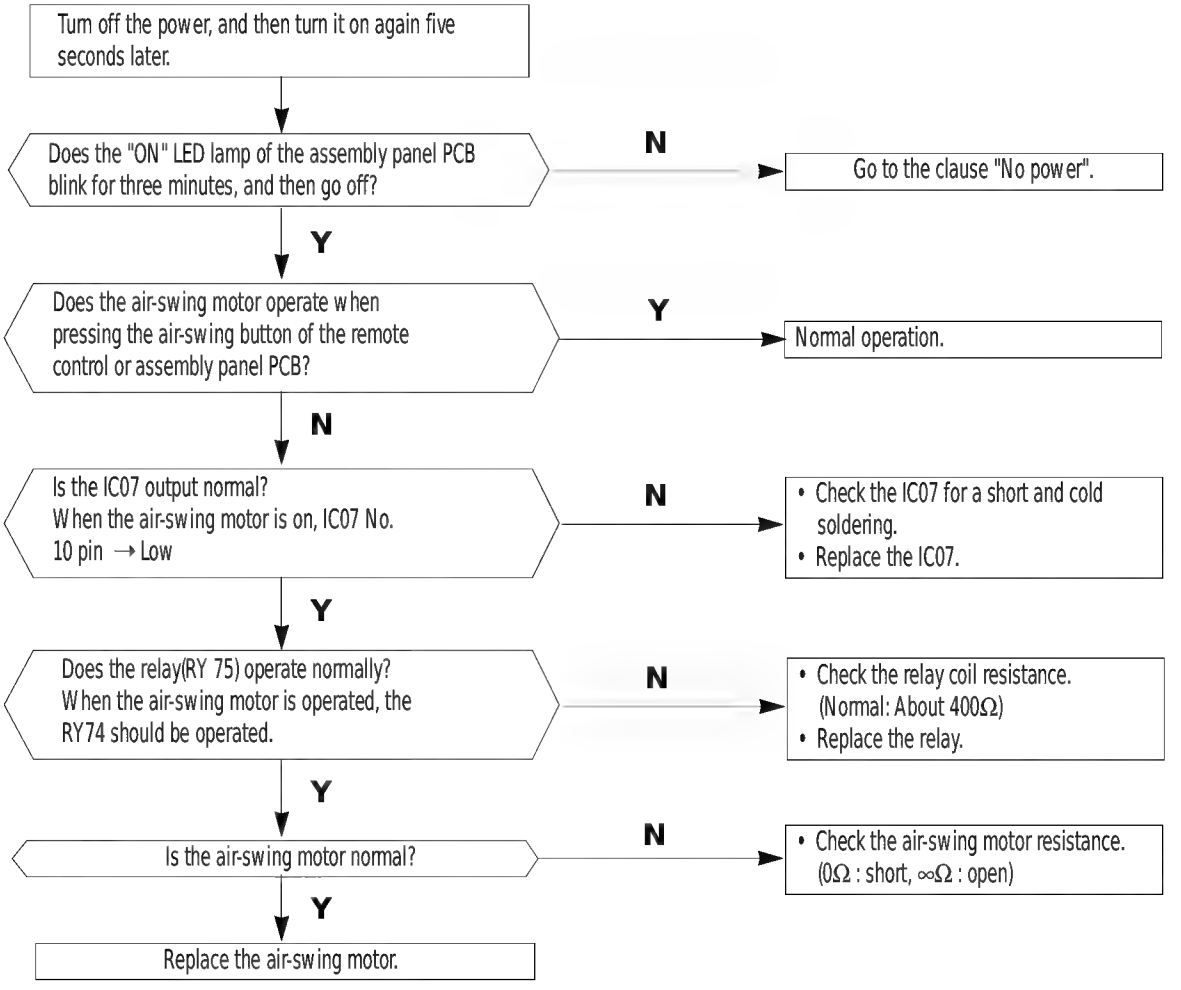
(1) Is the voltage of the power source normal ? (AC 198V ~ AC 264V)
(2) Is the desired temperature lower than the indoor temperature in the cool mode? (Compressor stopped)
(3) Is the desired temperature higher than the indoor temperature in the HEAT mode? (Compressor stopped)
(4) Is the starting condenser in good contact?
(5) Is the electric wire in good contact ? (CN71, RY71)
(6) Is the output voltage of the IC01(KA7812) and IC02(KA7805) normal ?


Turn off the power, and then turn it on again five seconds later.
Does the "ON" LED lamp of the assembly panel PCB blink for three minutes, and then go off?
N
Go to the clause "No power".
Y
Check whether the "ON" LED lamp is on and the operation starts when pressing the on/off button of the remocon or assembly panel PCB?
N
• Go to the clause "when he remocon does not operate".
• Go to the clause "when he assembly panel PCB does not operate".
Y
Check whether the compressor is activated in three minutes after turning on the power with the "COOL" or "HEAT" LED lamp being switched on when selecting the cool mode of the remocon or assembly panel PCB.
Y
Normal operation.
N
Is the IC07 output normal?
When the compressor is ON, IC07 No. 14 pin -->Low.
N
• Check the IC07 for short and cold soldering.
• Replace the IC07.
Y
Does the relay(RY74) operate normally?
When the compressor is ON, the RY71 should operat.
N
• Check the relay coil resistance. (resistance : About 150Ω±20Ω)
• Replace the relay.
Y
Is the compressor normal?
N
• Check the operation of the O.L.P, and replace it if necessary.
• Check the compressor resistance.(0Ω : short, ∞Ω : open)
Y
Replace the compressor.

5-2-5 Wen the air swing motor is not operated

1) Check points

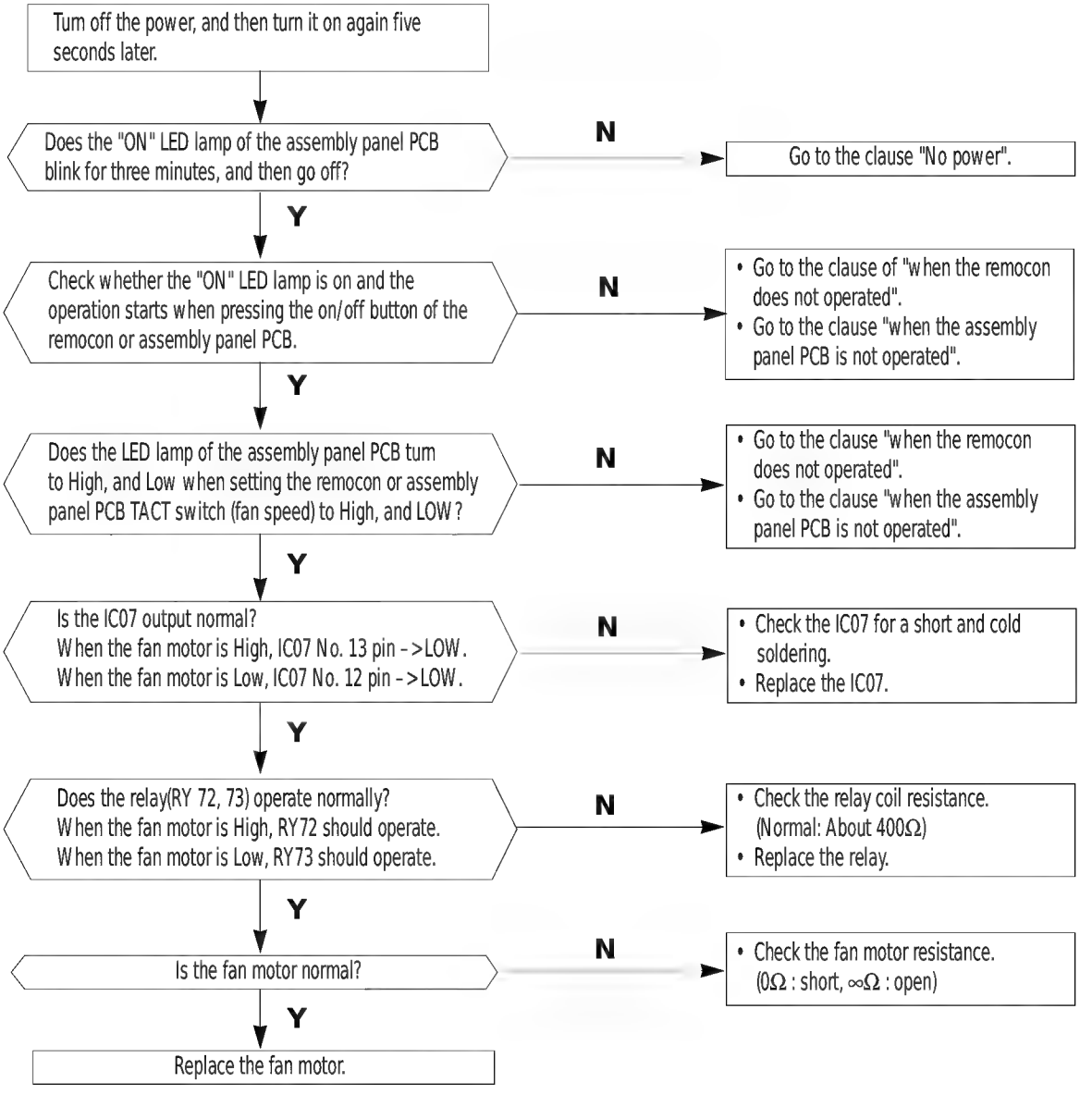
(1) Is the voltage of the power source normal ?(AC198V ~ AC264V)
(2) Is the electric wire in good contact ?(CN71, RY71)
(3) Is the swing motor conector in good contact?(CN71)
(4) Is the terminal connected to the swing motor in good contact?
(5) Is the output voltage of the IC01(KA7812) and IC02(KA7805) normal?


Turn off the power, and then turn it on again five seconds later.
Does the "ON" LED lamp of the assembly panel PCB blink for three minutes, and then go off?
N
Go to the clause "No power".
Y
Does the air-swing motor operate when pressing the air-swing button of the remote control or assembly panel PCB?
Y
Normal operation.
N
Is the IC07 output normal?
When the air-swing motor is on, IC07 No. 10 pin → Low
N
• Check the IC07 for a short and cold soldering.
• Replace the IC07.
Y
Does the relay(RY 75) operate normally?
When the air-swing motor is operated, the RY74 should be operated.
N
• Check the relay coil resistance. (Normal: About 400Ω)
• Replace the relay.
Y
Is the air-swing motor normal?
N
• Check the air-swing motor resistance. (0Ω : short, ∞Ω : open)
Y
Replace the air-swing motor.

5-2-6 When the fan motor does not operate

1) Check points

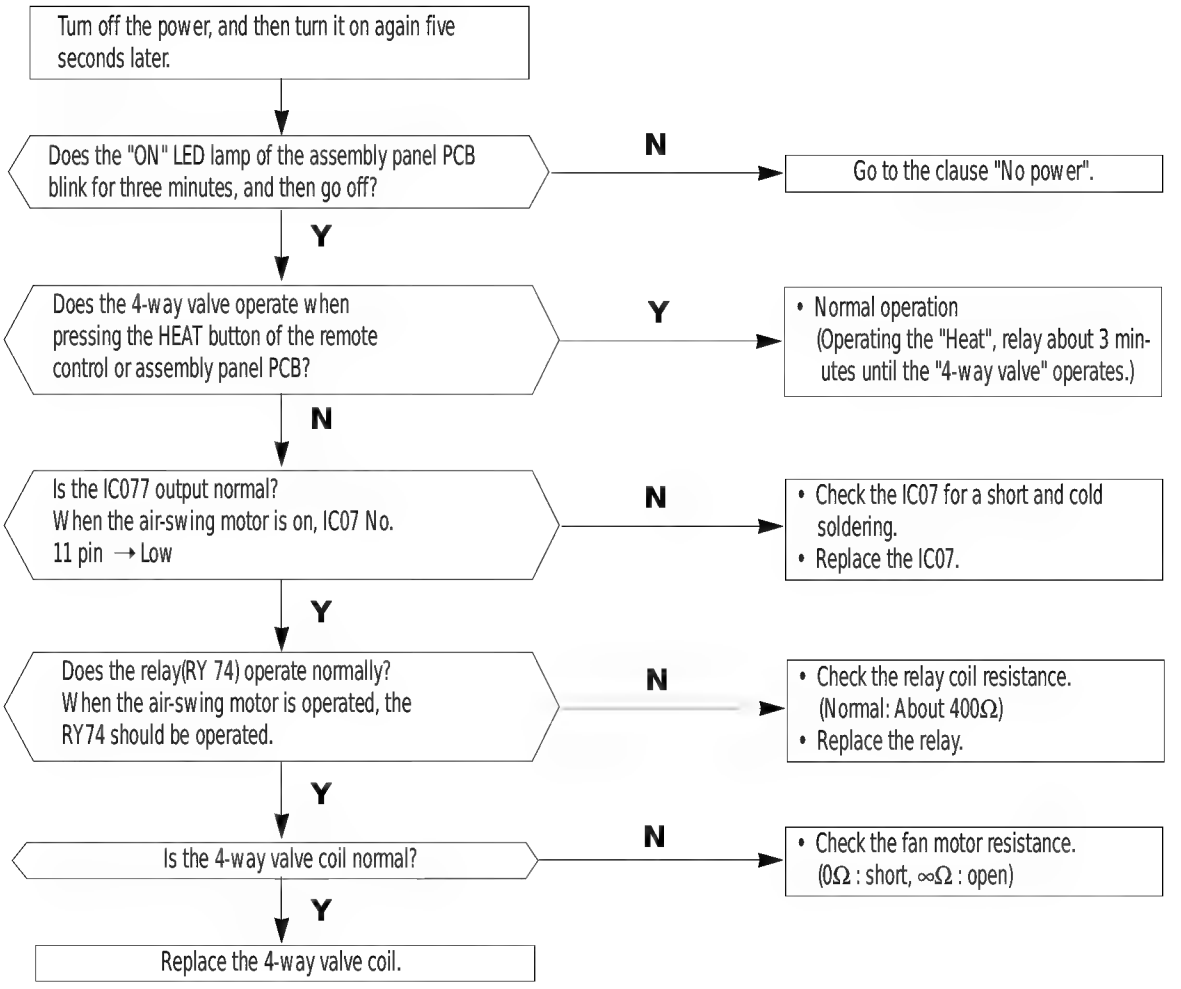
(1) Is the voltage of the power source normal ?(AC198V ~ AC264V)
(2) Is the electric wire in good contact ?(CN71, RY71)
(3) Is the starting condenser in good contact?
(4) Is the fan motor connector in good contact?(CN73)
(5) Is the output voltage of the IC01(KA7812) and IC02(KA7805) normal ?


Turn off the power, and then turn it on again five seconds later.
Does the "ON" LED lamp of the assembly panel PCB blink for three minutes, and then go off?
N
Go to the clause "No power".
Y
Check whether the "ON" LED lamp is on and the operation starts when pressing the on/off button of the remocon or assembly panel PCB.
N
• Go to the clause of "when the remocon does not operated".
• Go to the clause "when the assembly panel PCB is not operated".
Y
Does the LED lamp of the assembly panel PCB turn to High, and Low when setting the remocon or assembly panel PCB TACT switch (fan speed) to High, and LOW?
N
• Go to the clause "when the remocon does not operated".
• Go to the clause "when the assembly panel PCB is not operated".
Y
Is the IC07 output normal?
When the fan motor is High, IC07 No. 13 pin ->LOW.
When the fan motor is Low, IC07 No. 12 pin ->LOW.
N
• Check the IC07 for a short and cold soldering.
• Replace the IC07.
Y
Does the relay(RY 72, 73) operate normally?
When the fan motor is High, RY72 should operate.
When the fan motor is Low, RY73 should operate.
N
• Check the relay coil resistance. (Normal: About 400Ω)
• Replace the relay.
Y
Is the fan motor normal?
N
• Check the fan motor resistance. (0Ω : short, ∞Ω : open)
Y
Replace the fan motor.

5-2-7 Wen the 4-way valve is not operated

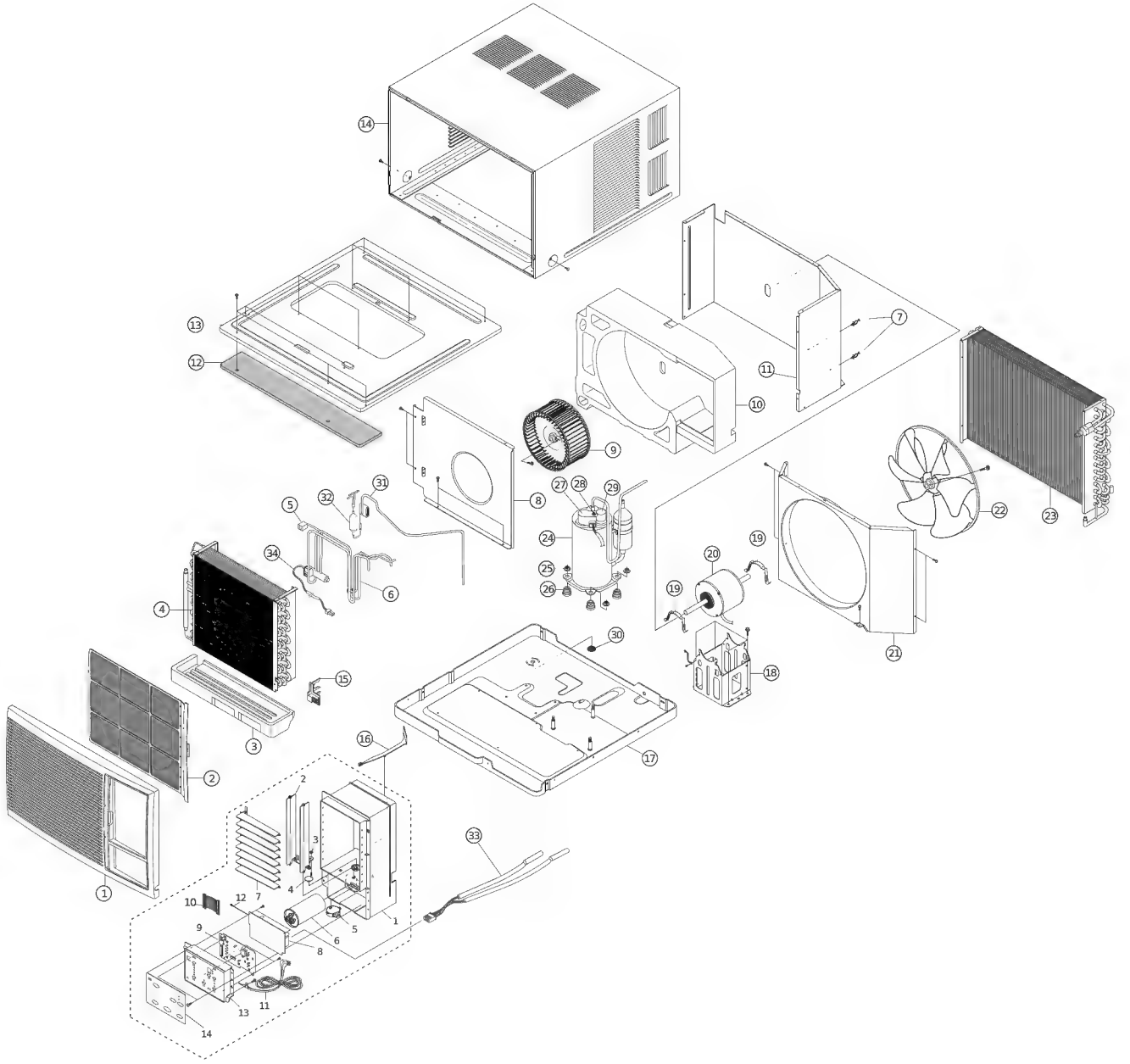
1) Check points

(1) Is the voltage of the power source normal ?(AC198V ~ AC264V)
(2) Is the electric wire in good contact ?(CN72)
(3) Is the 4-way valve conector in good contact?(CN72)
(4) Is the output voltage of the IC01(KA7812) and IC02(KA7805) normal?
(5) Is the unit heating cycle?


Turn off the power, and then turn it on again five seconds later.
Does the "ON" LED lamp of the assembly panel PCB blink for three minutes, and then go off?
N
Go to the clause "No power".
Y
Does the 4-way valve operate when pressing the HEAT button of the remote control or assembly panel PCB?
Y
• Normal operation (Operating the "Heat", relay about 3 minutes until the "4-way valve" operates.)
N
Is the IC077 output normal? When the air-swing motor is on, IC07 No. 11 pin → Low
N
• Check the IC07 for a short and cold soldering.
• Replace the IC07.
Y
Does the relay(RY 74) operate normally? When the air-swing motor is operated, the RY74 should be operated.
N
• Check the relay coil resistance. (Normal: About 400Ω)
• Replace the relay.
Y
Is the 4-way valve coil normal?
N
• Check the fan motor resistance. (0Ω : short, ∞Ω : open)
Y
Replace the 4-way valve coil.

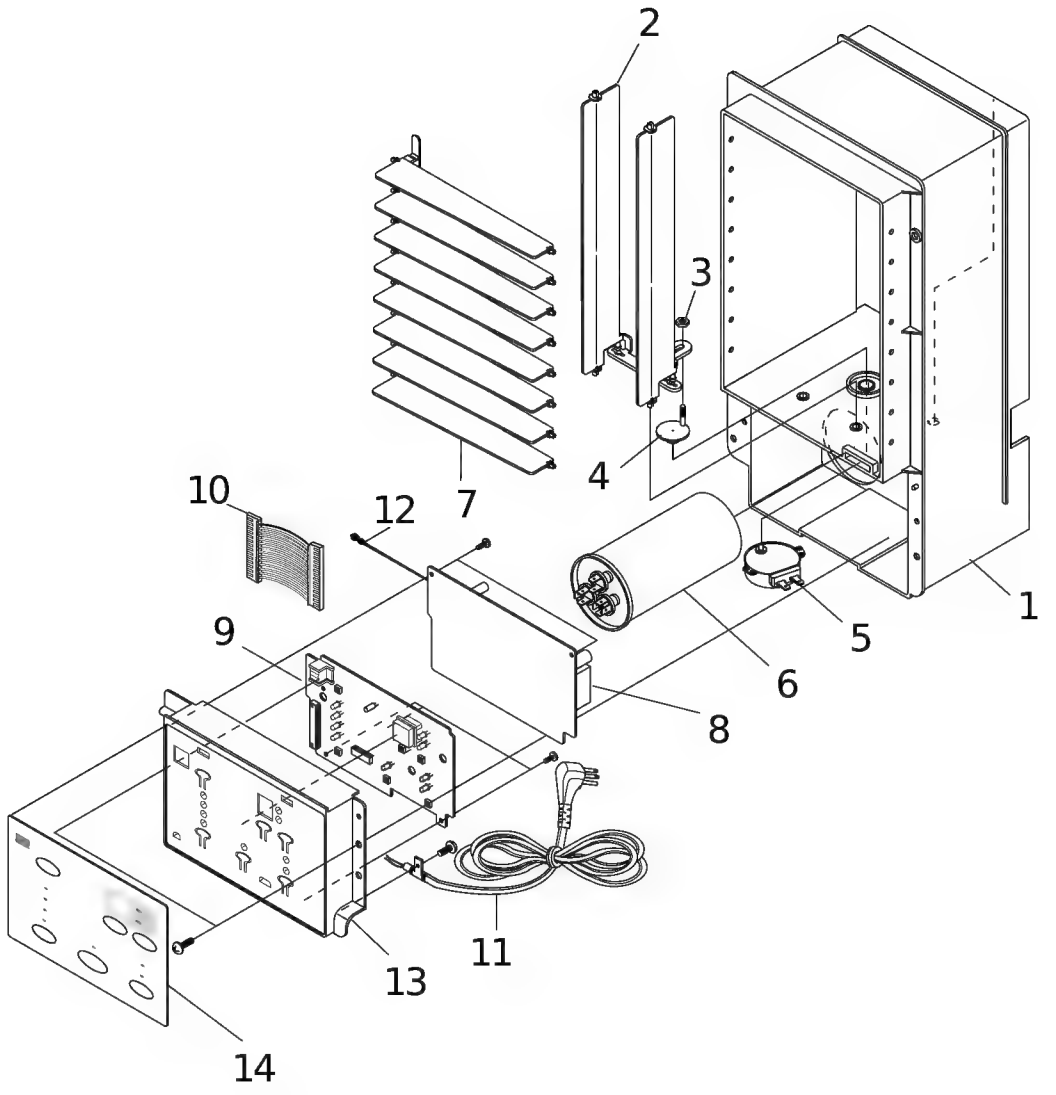
6. Exploded View and Parts List

6-1 Main unit



■ Part List

No.	Code No.	Description	Specification	Q'TY	Remarks
				AWH-1808ER	
1	DB92-10290B	FRONT GRILLE	HIPS	1	
2	DB63-30129A	GUARD-AIR FILTER	ABS	1	
3	DB63-40013A	TRAY-DRAIN	FO-PS	1	
4	DB96-40166A	EVAPORATOR	ASS'Y	1	
5	DB73-20096A	RUBBER-COVER PIPE	NBR	1	
6	DB62-31613A	4-WAY V/V(ASS'Y)	OD12.7	1	
7	DB71-50025A	WIRE-HOLDER	DAWH-3NB	2	
8	DB70-10604A	PLATE-EVAP CASING	SGCC-M(Z22)	1	
9	DB94-30080A	BLOWER-ASS'Y	ABS+G/F	1	
10	DB61-10146A	CASE-EVAP	FO-PS	1	
11	DB70-10602A	PLATE-PARTITION	SGCC-M(Z22)	1	
12	DB72-10147A	SEAL-COVER	FO-PU	1	
13	DB70-10605A	PLATE-COVER	SGCC-M(Z22)	1	
14	DB90-10548B	CABINET	ASS'Y	1	
15	DB61-40125A	HOLDER-THERMISTER	PP	1	
16	DB75-10022A	DAMPER LEVER	ABS	1	
17	DB90-20167A	PLATE-BOTTOM	ASS'Y	1	
18	DB61-30452C	SUPPORTER	SGCC-M	1	
19	DB65-10089A	CLIP-MOTOR	SK5-CSP	2	
20	DB31-10117C	MOTOR-FAN	220~240V/50Hz	1	▲
21	DB70-10603A	PLATE-COND CASING	SGCC-M(Z22)	1	
22	DB67-50028A	FAN-PROPELLER	ABS+G/F	1	
23	DB96-30263A	CONDENSER	ASS'Y	1	
24	DB95-10263B	ASS'Y-COMP	48B180JV1E7	1	▲
25	DB60-30028A	NUT-WASHER	M8, ZPC	3	
26	DB73-10004A	GROMMET-ISOLATOR	EPDM	3	
27	DB63-10165B	COVER-TERMINAL	NORYL, BLK	1	
28	DB60-30018A	NUT-FLANGE	M5, SM20C	1	
29	DB47-20001P	OLP	MRA12016-12007	1	▲
30	DB63-10355A	CAP-DRAIN	CR	1	
31	DB96-10564A	ASS'Y CAPI TUBE	ASS'Y	1	
32	DB96-10557A	ASS'Y DISTRIBUTOR	ASS'Y	1	
33	DB32-10045A	THEMISTOR COND	ASS'Y	1	
34	DB27-10030A	ASS'Y SOLENOID COIL	ASS'Y	1	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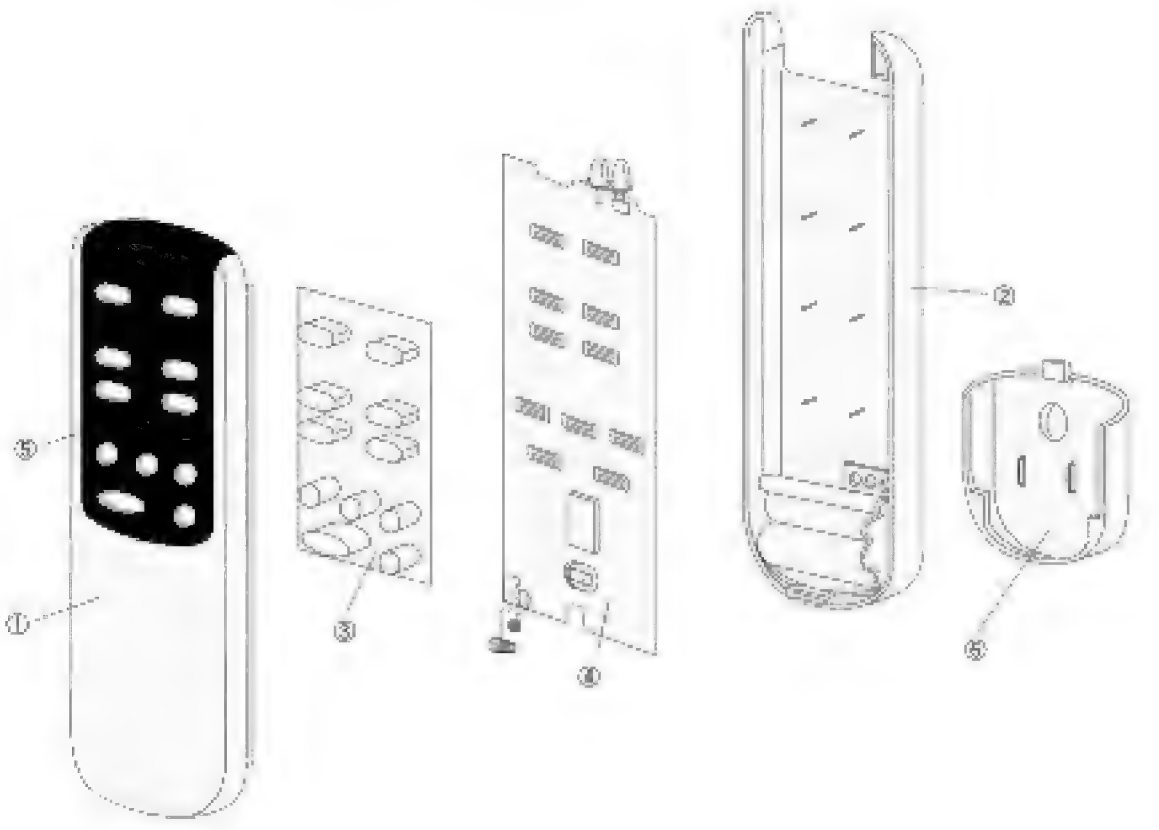
■ Part List

No.	Code No.	Description	Specification	Q'TY	Remarks
				AWH-1808ER	
1	DB61-60091A	FRAME-BLADE	PS	1	
2	DB66-30142A	BLADE-V	PP	1	
3	DB60-50010B	WASHER-STOP	SUS-304	1	
4	DB66-70022A	ARM-BLADE	ABS	1	
5	DB95-20065F	SWING-MOTOR	M2LJ 49ZU32	1	▲
6	2501-001059	C-OIL	6/40μF x 450VAC	1	▲
7	DB66-30143A	BLADE-H	PP	1	
8	DB93-10464A	ASS'Y MAIN PCB	AWH-1808ER	1	▲
9	DB93-10465A	ASS'Y PANEL PCB	AWH-1808ER	1	▲
10	DB39-20358A	C/W DISPLAY	AWH-1808ER	1	
11	DB39-10084A	POWER CORD	AP3, 15A/250V	1	▲
12	DB32-10005C	THERMISTOR	10KD SAH-151CH	1	▲
13	DB64-70074A	PANEL-CONTROL	PS	1	▲
14	DB64-40163A	INLAY-CONTROL	PC	1	

6-3 ASS'Y REMOCON(DB93-30046E)

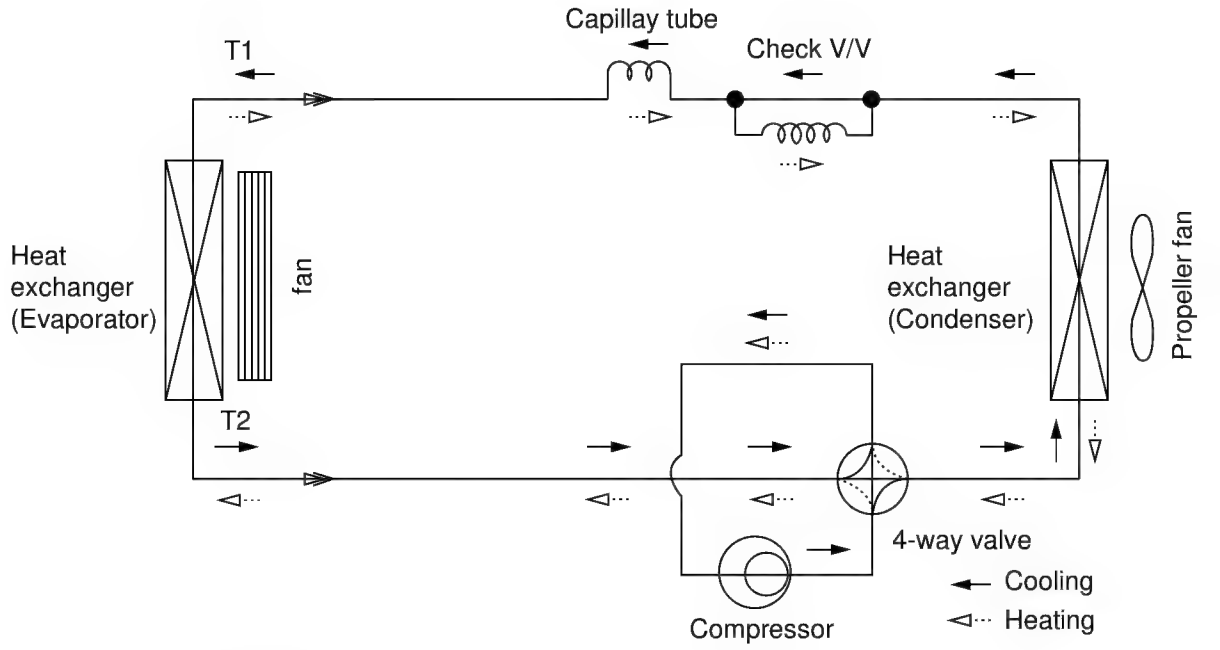


■ Part List

No.	Code No.	Description	Specification	Q'TY	Remarks
				AWH-1808ER	
	DB93-30026E	ASS'Y REMOCON	AHR-100	1	
1	DB61-10022A	CASE REMOCON(UPP)	ABS	1	
2	DB61-10011A	CASE REMOCON(LOW)	ABS	1	
3	DB73-20013A	RUBBER(BT)	NBR	1	
4	DB93-10462A	ASS'Y REMOCON PCB	AWH-1808ER	1	
5	DB64-40008B	WINDOW REMOCON	PC T1.5	1	
6	DB63-10081A	COVER BATTERY	ABS, T2.0	1	

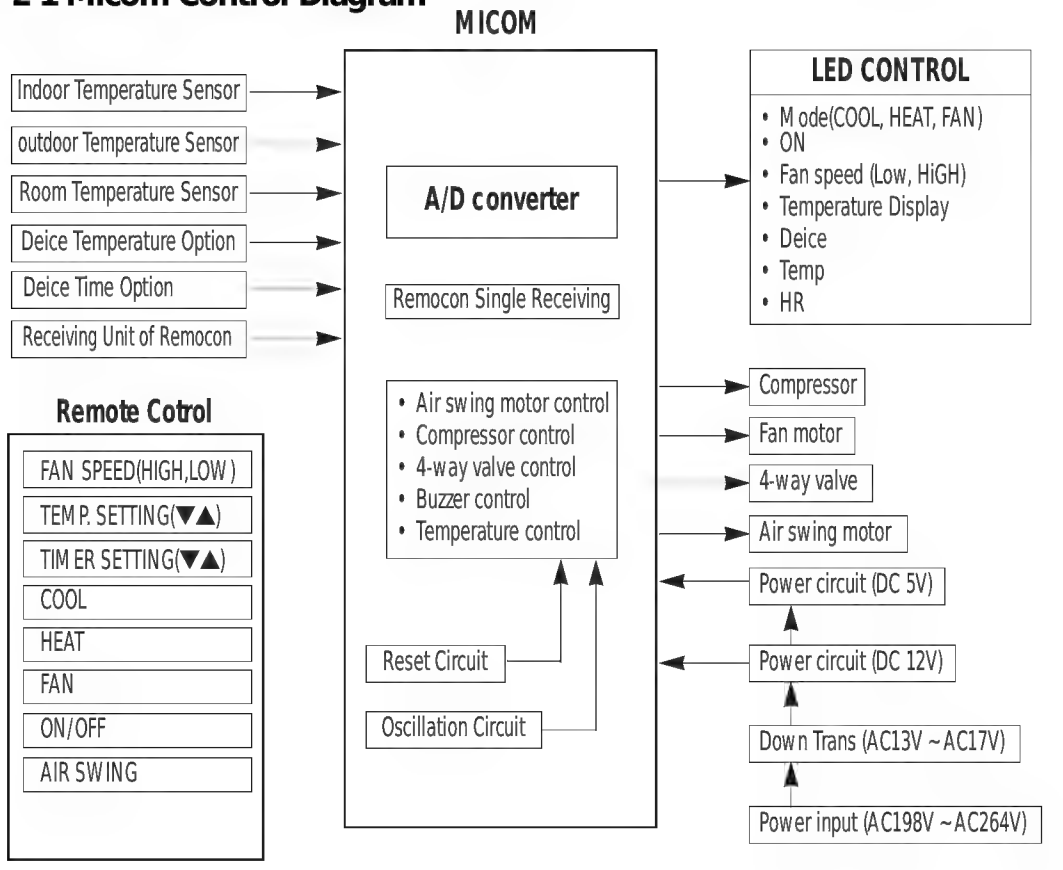
7. Block Diagram

7-1 Refrigerating Cycle Block Diagram



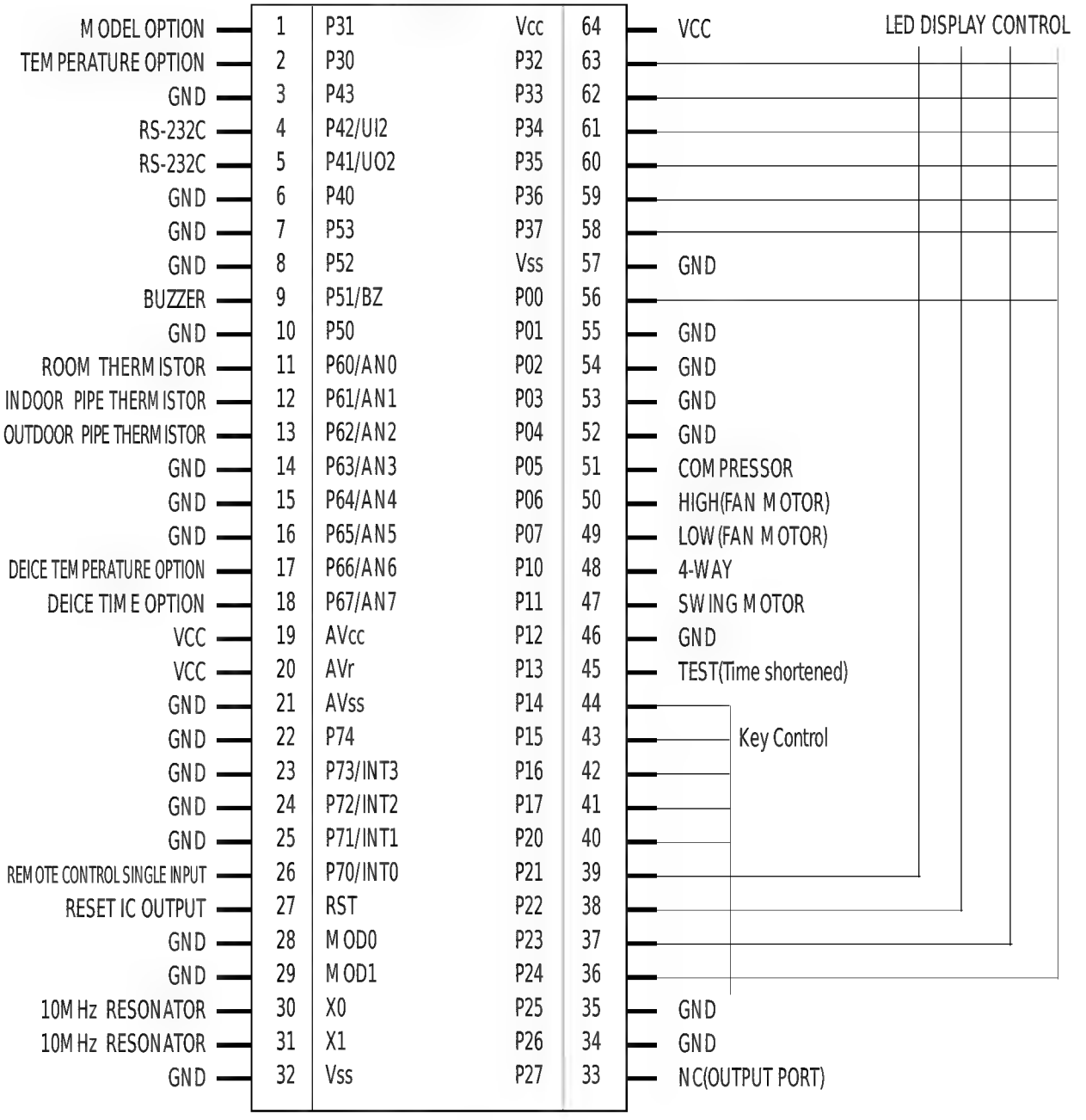
7-2 Basic Structure

7-2-1 Micom Control Diagram



7-2-2 Micom Pin Assignment

(MB89635)


MODEL OPTION 1 P31 Vcc 64 VCC
TEMPERATURE OPTION 2 P30 P32 63
GND 3 P43 P33 62
RS-232C 4 P42/UI2 P34 61
RS-232C 5 P41/UO2 P35 60
GND 6 P40 P36 59
GND 7 P53 P37 58
GND 8 P52 Vss 57 GND
BUZZER 9 P51/BZ P00 56
GND 10 P50 P01 55 GND
ROOM THERMISTOR 11 P60/AN0 P02 54 GND
INDOOR PIPE THERMISTOR 12 P61/AN1 P03 53 GND
OUTDOOR PIPE THERMISTOR 13 P62/AN2 P04 52 GND
GND 14 P63/AN3 P05 51 COMPRESSOR
GND 15 P64/AN4 P06 50 HIGH(FAN MOTOR)
GND 16 P65/AN5 P07 49 LOW(FAN MOTOR)
DEICE TEMPERATURE OPTION 17 P66/AN6 P10 48 4-WAY
DEICE TIME OPTION 18 P67/AN7 P11 47 SWING MOTOR
VCC 19 AVcc P12 46 GND
VCC 20 AVr P13 45 TEST(Time shortened)
GND 21 AVss P14 44
GND 22 P74 P15 43 Key Control
GND 23 P73/INT3 P16 42
GND 24 P72/INT2 P17 41
GND 25 P71/INT1 P20 40
REMOTE CONTROL SINGLE INPUT 26 P70/INT0 P21 39
RESET IC OUTPUT 27 RST P22 38
GND 28 MOD0 P23 37
GND 29 MOD1 P24 36
10MHz RESONATOR 30 X0 P25 35 GND
10MHz RESONATOR 31 X1 P26 34 GND
GND 32 Vss P27 33 NC(OUTPUT PORT)
LED DISPLAY CONTROL

<MODEL OPTION>

P31(#1)	OPTION	NOTE
HIGH	COOLING	COOLING ONLY
LOW	HEAT PUMP	AWH-1808E(HEAT PUMP)

<TEMPERATURE DISPLAY OPTION>

P30(#2)	OPTION	NOTE
HIGH	℃	TEMP DISPLAY UNIT
LOW	℉	TEMP DISPLAY UNIT

<DEICE TIME OPTION>

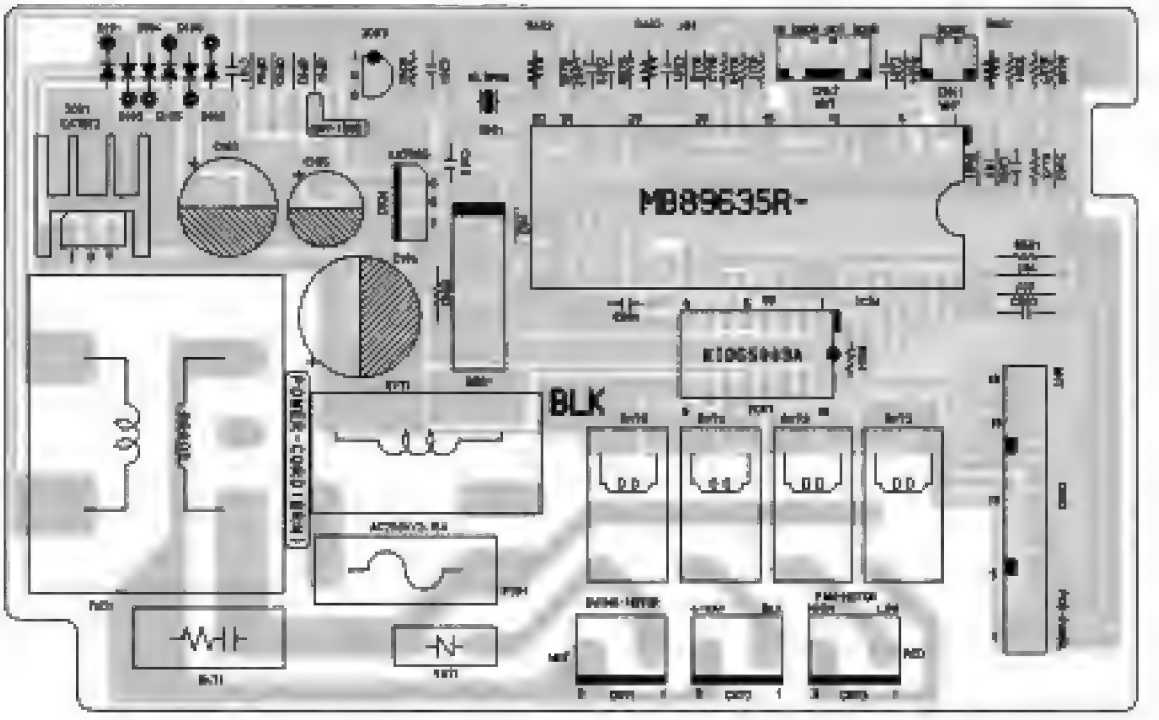
	GND 0.9V	~1V ~1.9V	2V~ 2.9V	3V~ 3.9V	4V~ 4.9V
AN6(#7)	standard	standard +1min	standard +2min	standard +3min	standard +4min

<DEICE TEMPERATURE OPTION>

	GND 0.9V	~1V ~1.9V	2V~ 2.9V	3V~ 3.9V	4V~ 4.9V
AN7(#18)	standard -2℃	standard -1℃	standard	standard +1℃	standard +2℃

8. PCB Diagram

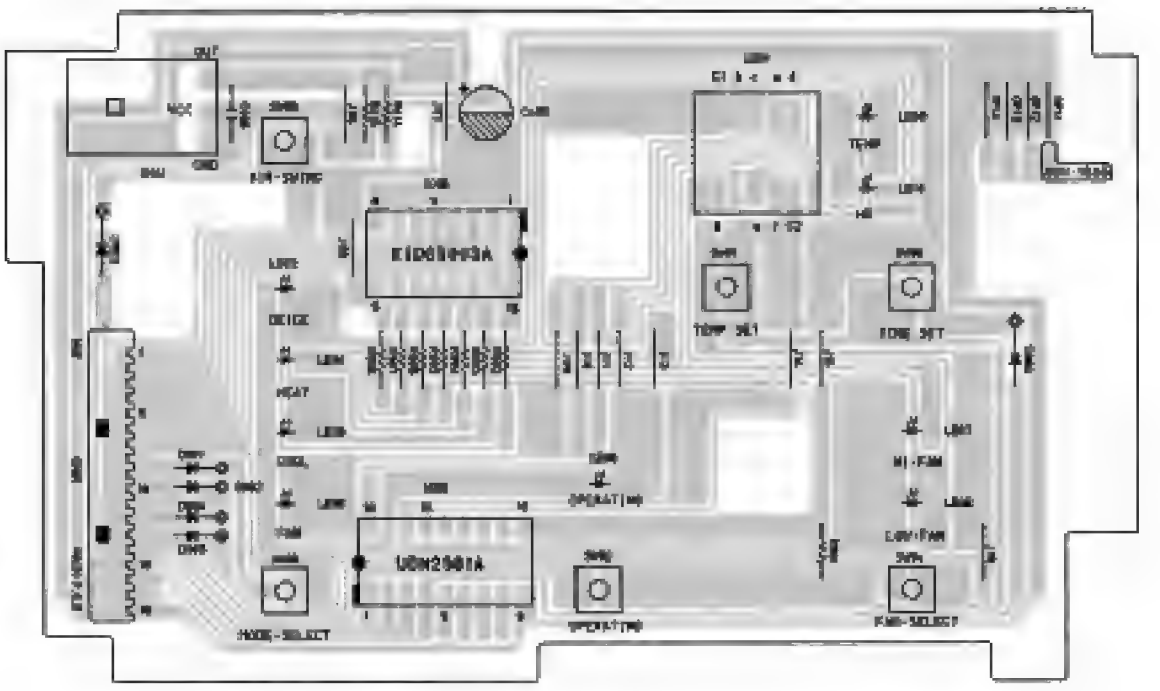
8-1 Main PCB (ASS'Y CODE NO : DB93-10464A)



■ Part List

No.	Description	Code No.	Specification	Q'TY	Remarks
1	ASSY MAIN PCB	DB93-10464A	AWH-1808ER	1	
2	FUSE	DE32-10037A	FST 250V 3.15A	1	F701
3	DIODE RECT	0402-000559	D4G 400V	6	D101~D106
4	IC VOLT REGU	DE13-20008A	KA7812 TO-220AB	1	IC01
5	IC VOLT REGU	DE13-20016A	KA7805 TO-220AB	1	IC02
6	SCREW TAPPING	DE60-10100A	M3*6 FEFZY	1	
7	HEAT SINK	DE62-30039A	AL H25	1	
8	R-CARBON	2001-000429	RD 1/8 TP 102-J	1	R201
9	R-METAL FILM	2001-000218	RD 1/8 TP 103-F	3	R401, R402, R403
10	R-CARBON	2001-000003	RD 1/8 TP 331-J	3	R404~406
11	R-CARBON	2001-001172	RD 1/2T 621-J	1	R602
12	C-CERAMIC	2202-000780	100nF/50V	9	C101, C103, C201,C401~403, C501, C502, C901
13	C-AL	2401-000710	2200uF/25V	1	C104
14	C-AL	2401-000180	1000uF/35V	1	C102
15	C-AL	2401-001397	470uF/25V	1	C105
16	C-CERAMIC	2202-000121	101K 0A/50V	1	C404
17	FUSE HOLDER	DE47-40024A	FH-51H 7.5A	1	F701
18	SPARK KILLER	DE47-30019A	ESQ1201	1	SK71
19	R-CARBON	2001-000065	RD 1/4 TP 103-J	1	R501
20	IC-DRIVE	DE27-20017A	KID 65003AP	1	IC07
21	RELAY	3501-000399	JQ1A-12V	4	RY72~RY75
22	CERAMIC RESONATOR	2802-000103	10Mhz	1	X501
23	R-CARBON	2001-000290	RD 1/8 TP 103-J	7	R601, 407~410, 412, 301
24	IC-MCU	DB09-10150A	MB89635	1	IC04
25	RELAY POWER	DB47-90081A	JM1aN DC12V	1	RY71
26	IC	DE13-20009A	KA7533 DIP	1	IC03
27	BUZZER	DE30-20016A	CBE 2220BA STICK	1	BZ61
28	VARISTOR	1405-000147	14D-471K	1	VA71
29	CONNECTOR HEADER	3711-002662	JSW250-02 WHT	1	CN41
30	CONNECTOR WAFER	3711-000940	SMW250-04 WHT	1	CN42
31	CONNECTOR WAFER	3711-003783	53134-1810 WHT	1	CN92
32	CONNECTOR WAFER	3711-003405	YW396-03AV BLK	1	CN72
33	CONNECTOR WAFER	3711-000203	YW396-03AV WHT	1	CN71
34	CONNECTOR WAFER	3711-003407	YW396-03AV RED	1	CN73
35	WIRE-SO, COPPER	DE39-60001A	PI 0.6 SN 52MM	7	J1-J5, SW01, OP01
36	PCB MAIN	DE41-10411A	AWH-1808ER	1	PCB
37	TRANS L.V	DE26-20114A	230V 17V	1	TN71
38	PIN EYELET	DE60-60012A	OD 2.5 L 3.0	5	TN71
39	R-CARBON	2001-000241	RD1/8TP152-J	1	R411

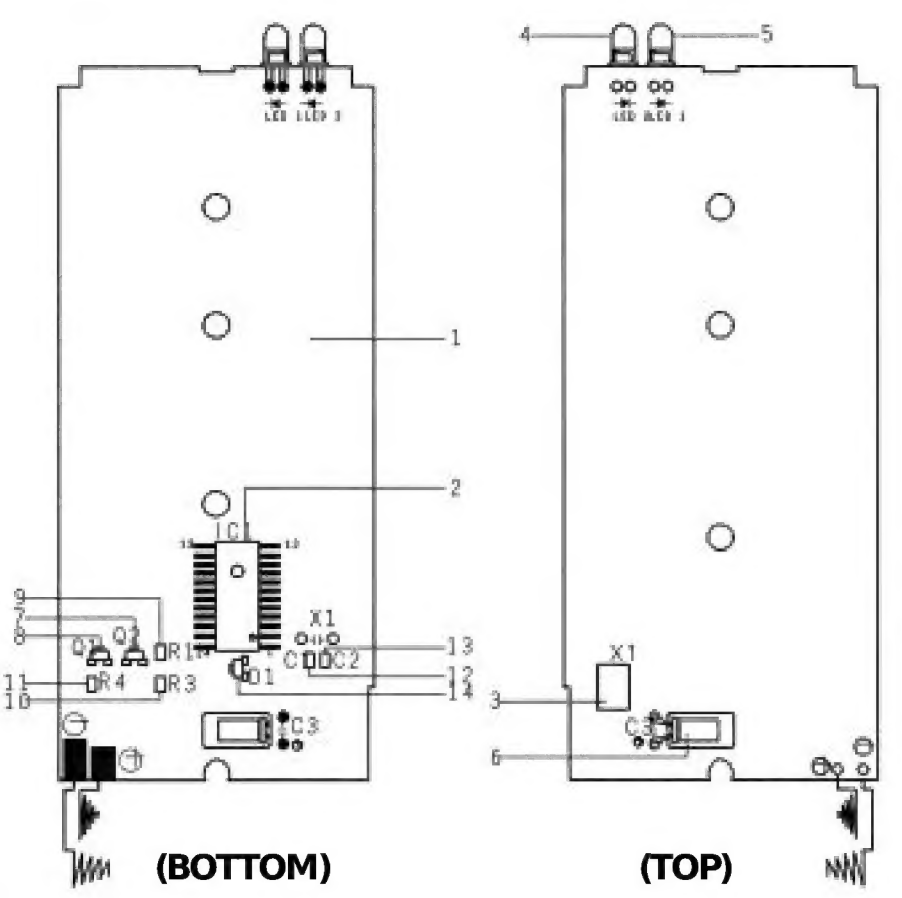
8-2 Display PCB (ASS'Y CODE NO : DB93-10465A)



■ Part List

No.	Description	Code No.	Specification	Q'TY	Remarks
1	ASS'Y PANEL PCB	DB93-10465A	AWH-1808ER	1	
2	LED LAMP	DB07-10021A	LTL-4233(GRN)	7	LE03,LE05~LE10
3	LED LAMP	DB07-10019A	LTL-4213(RED)	2	LE02,LE04
4	MODULE REMOCON	DB32-50023A	TSOP 1238TBI	1	RM41
5	CONNECTOR WAFER	3711-003782	53156-1810WHT	1	CN91
6	LED DISPLAY	DB61-90080A	ABS	1	
7	IC-SOURCE DRIVE	1003-000217	UDN2981A	1	IC01
8	WIRE-SO, COPPER	DE39-60001A	PI 06 SN 52MM	1	J1~J11, OP01
9	SW TACT V	3404-000280	KPT-1115A	6	SW91~SW96
10	PCB PANEL	DE41-10412A	AWH-1808ER	1	PCB
11	DIODE SWITCHING	0401-000005	1N4148	6	D901~D906
12	R-CARBON	2001-000776	RD 1/2 TP 471	7	R902~R908
13	R-CARBON	2001-000065	RD 1/4 TP 103-J	1	R402
14	LED-DISPLAY	DE07-20028A	SSD-A3202GMT-S GR	1	LE01
15	IC-DRIVE	DE13-20017A	KID65003AP	1	IC02
16	C-AL	2401-001212	4.7uF 50V	1	C401
17	C-CERAMIC	2201-000796	1nF/50V	1	C402
18	R-CARBON	2001-000036	RD 1/4 TP 331-J	1	R401

8-3 ASS'Y PCB-REMOCON (ASS'Y CODE NO : DB93-10462A)

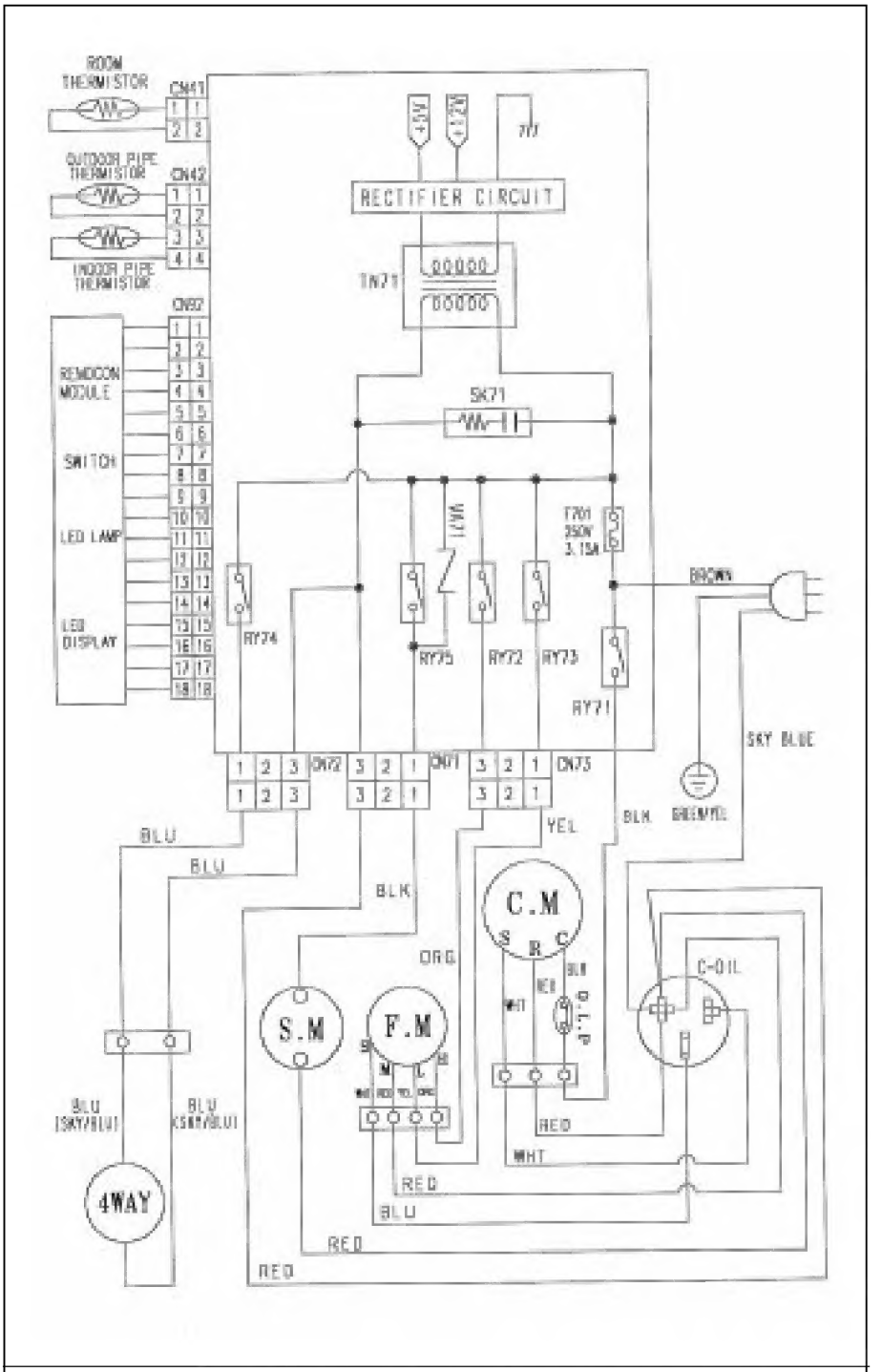


■ Part List

No.	Description	Code No.	Specification	Q'TY	Remarks
1	PCB REMOCON			1	PCB
2	IC-MCU	DB09-10127A	KS51810-19	1	IC1
3	RESONATOR		CSB 455EBL	1	X1
4,5	IR LED		SI5312-H	2	LED1, LED2
6	C-ELEC		50V 4.7uF	1	C3
7,8	TR CHIP		2SC2412	2	Q1,Q2
9	R-CHIP		RMC 1/10 1.0-J	1	R1
10	R-CHIP		RMC 1/10 560K-J	1	R3
11	R-CHIP		RMC 1/10 330-J	1	R4
12,13	C-CERAMIC CHIP		CL21 C101J BNCS	2	C1, C2
14	BATTERY S/P-PLUS		SWPB	1	+
15	BATTERY S/P-MINUS		SWPB	1	-

9. Wiring Diagram

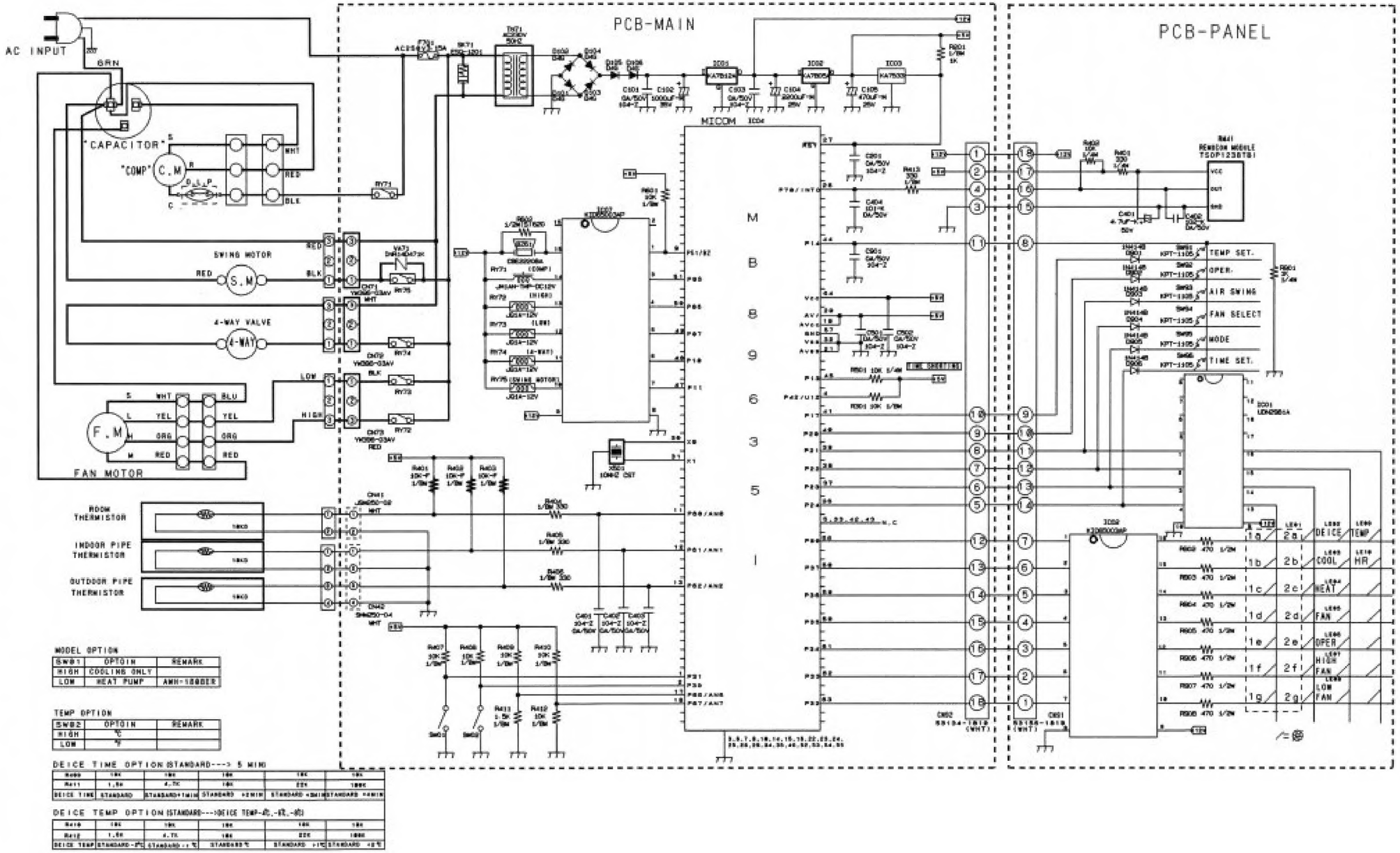
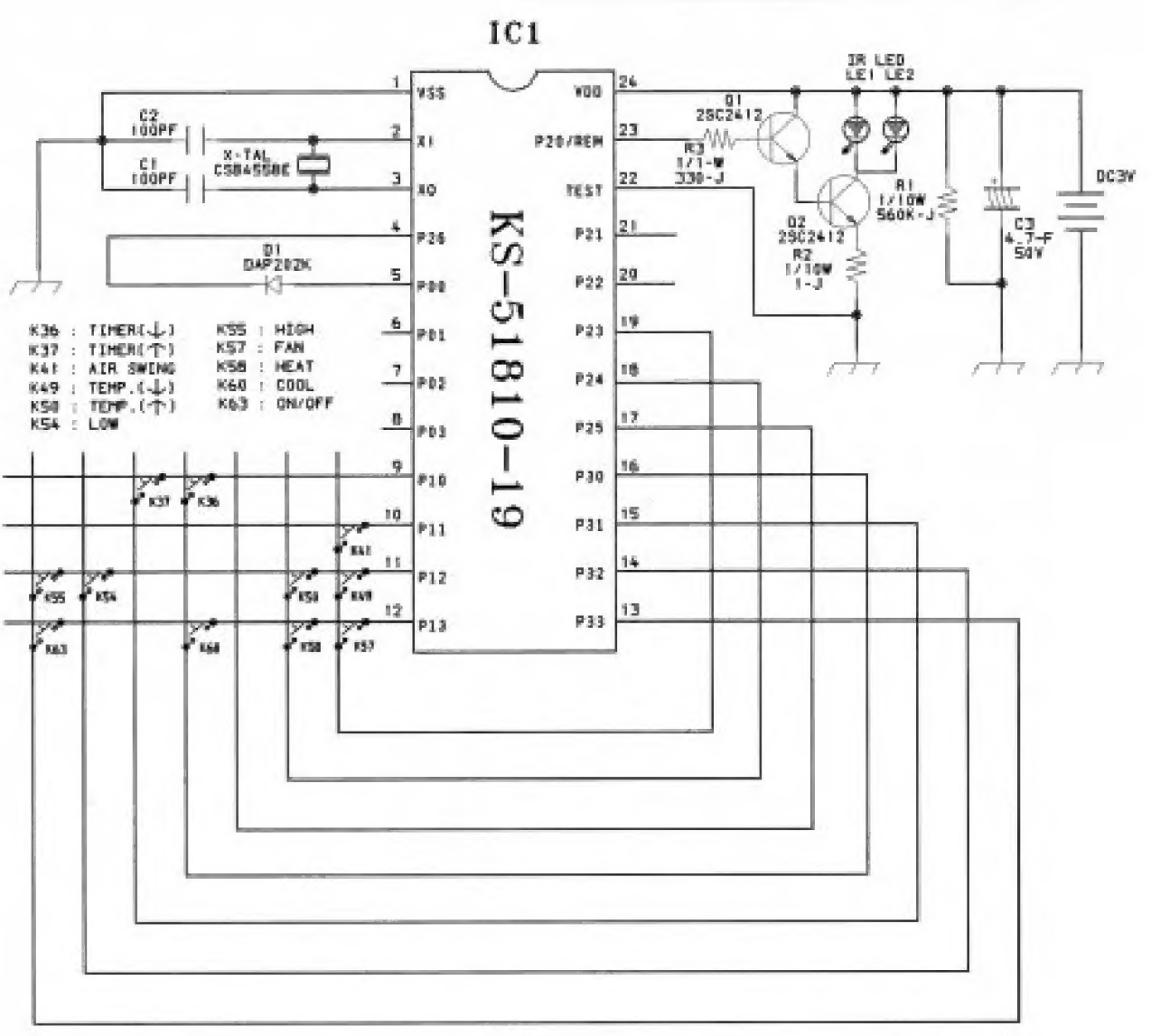
9-1 AWH-1808ER



AWH-1808ER : 6/40μF x 450VAC

10. Schematic Diagrams

10-1 Indoor Unit



10-2 Remote Control